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**Hydropower Investment
Promotion Project (HIPP)**

CONTRACTUAL FRAMEWORK FOR GEORGIAN EXPORT TRANSACTIONS TO TURKEY

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CONTRACTUAL FRAMEWORK FOR GEORGIAN EXPORT TRANSACTIONS TO TURKEY

USAID HYDROPOWER INVESTMENT PROMOTION PROJECT (HIPP)

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DELOITTE CONSULTING LLP

IN COLLABORATION WITH BLACK & VEATCH AND PIERCE
ATWOOD LLP.

USAID/CAUCASUS OFFICE OF ENERGY AND ENVIRONMENT

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This document was prepared by:

Author	Organization	Contact Details
John Levett	Deloitte Consulting	jlevett@levettassoc.com
Reviewer	Organization	Contact Details
Jake Delphia	Deloitte Consulting	<u>jdelphia@deloitte.com</u>
Elene Ghubianuri	Deloitte Consulting	<u>eghubianuri@dcop-hipp.ge</u>
Mariam Ioseliani	Deloitte Consulting	<u>mioseliani@dcop-hipp.ge</u>

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LIST OF ACRONYMS

ATC	Available Transmission Capacity
BNPX	Border Node Power Exchange
BOG	Bank of Georgia
BNPX	Border Node Power Exchange
BRP	Balancing Responsible Party
ECC	European Commodity Clearing AG
EPIAS	Enerji Piyasalari Isletme Anonim Sirketi, future market operator in Turkey
ESCO	Electricity System Commercial Operator
GNERC	Georgian National Energy and Water Supply Regulatory Commission
GOG	Government of Georgia
HIPP	USAID Hydropower Investment Project
HPP	Hydro Power Project
IOA	Implementation Operation Agreement
MFRC	Market Financial Reconciliation Center (Turkey)
MO	Georgian Market Operator
MOU	Memorandum of Understanding
OTC	Over the Counter
PMUM	Piyasa Mali Uzlastirma Merkezi, current market operator in Turkey
TDA	Transmission and Dispatch Agreement
TEIAS	Turkiye Elektrik Iletim Anonim Sirketi, transmission company and TSO
TRANSCO	Georgian Transmission Licensee
TSO	Georgian Transmission System Operator

INTRODUCTION

The purpose of this document is to describe the contractual framework for electricity exports from Georgia to Turkey. Some of the agreements described have application in the internal Georgian electricity market, but the focus is on export transactions to Turkey from renewable energy projects, particularly hydropower projects (“HPP”). There is also a brief discussion of several policy and institutional issues in preparation for market based export transactions.

A helpful reference, while somewhat complicated at first glance, is the chart that follows the Introduction section (Chart 1). This chart illustrates contractual arrangements between the various parties in export transactions Turkey. This document will provide a description of those contracts.

In some cases, the description of the contractual arrangement will be brief. For example, a service agreement that a market participant signs for transmission service is essentially an agreement to accept the rights and responsibilities of being a transmission customer; that is, to adhere to the transmission grid code and transmission tariff. In other cases, the description is more detailed where the agreements involve more complicated issues such as:

- Clearing and settlement of export transactions, potentially through a power exchange and associated clearing house;
- Protecting the HPP against the financial risk of unforeseen export restrictions that are not a result of the HPP failing to fulfill its obligations.

As part of the contractual framework, the concept of a Border Node Power Exchange (“BNPX”) is shown in Chart 1. The function of the BNPX, explained in more detail in the body of the document, is to provide an anonymous electronic trading platform for a pricing node at the border where Georgian Exporters and Turkish importers can enter, clear, and settle transactions in a special purpose power exchange and associated clearing house.

The first section of the document addresses the contracts shown in the various lines originating from the HPP box in Chart 1 including:

- Implementation Agreement and Memorandum of Understanding
- Guaranteed Power Purchase Agreement
- Connection Agreement
- Transmission and Dispatch Agreement
- Transmission Service Agreement
- Market Operations Service Agreement
- Energy Supply Agreement
- Consolidator Agreement
- Border Node Power Exchange Service Agreement
- Balancing Responsible Party Agreement

The second section of the document addresses the contracts involving Georgian parties other than the HPP:

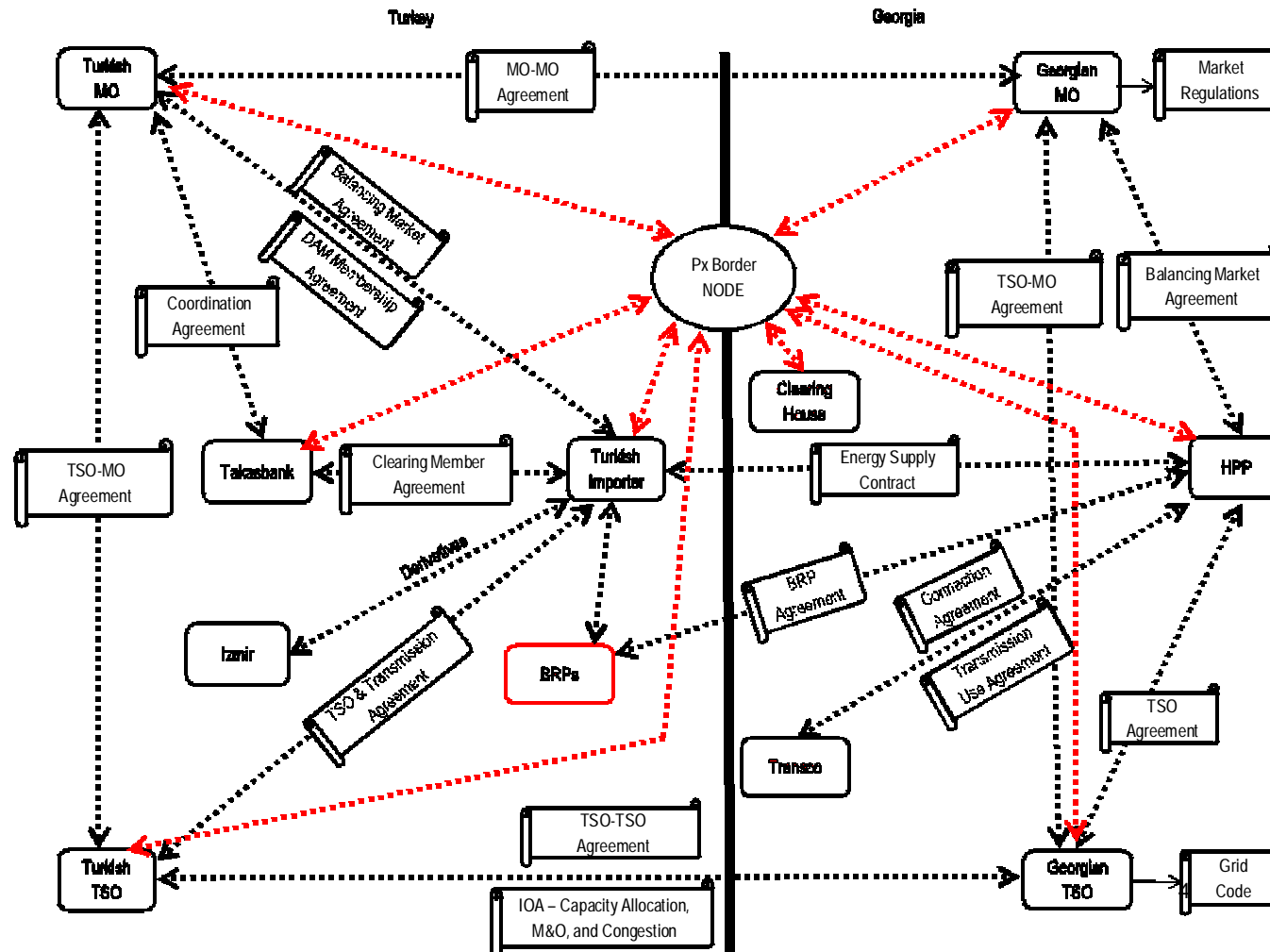
- Transmission Grid Code
- Interconnection Operation Agreement
- TSO – MO Agreement
- Market Rules
- MO – BNPX Agreement
- MO – MO Arrangement

The third section addresses the contracts with parties in Turkey. This is a more high level review since the Georgian Exporters are not parties to those agreements. However, some level of familiarity is required to participate effectively with Turkish importers in the Turkish market.

- Turkish Importer – Balancing Responsible Party (“BRP”) Agreement
- PMUM/EPIAS – Takasbank Agreement
- PMUM – EPIAS Transition
- Turkish Importer Market Activities

CHART 1

CONTRACTUAL ARRANGEMENTS



SECTION 1

HYDROPOWER PROJECT AGREEMENTS

Implementation Agreement and Memorandum of Understanding (“MOU”)¹

Parties: Hydro Power Project (“HPP”), Government of Georgia (“GoG”) represented by the Ministry of Energy and Natural Resources, Electricity System Commercial Operator (“ESCO”), and Energotrans.

Purpose: This agreement defines the rights and obligations of the parties with respect to items such as government assistance in licensing, obtaining water rights, permitting and construction commencement provisions, delay penalties, and winter export restrictions. It includes a put option for the benefit of the HPP for ESCO to purchase the output through a Guaranteed Power Purchase Agreement. The Implementation Agreement also obligates Energotrans to enter into an agreement to provide the HPP with the necessary transmission capacity to export. These services are on a take or pay basis for both parties.

Current status: There are 1154 MW of currently active projects under MOUs. Another 1058 MW signed MOUs are on hold due to environmental, social and other reasons or under assessment by the investors.

Future action: It is likely that HPP developers will need assurances from the GoG similar to those contained in the implementation agreement in order to move forward with projects in the future. As a result, there is going to be a continued need for this type of agreement.

Discussion: There are two areas of policy issues that are likely to impact Implementation agreements in the future. First, in order to maintain independence as ESCO transitions to a market operator role, ESCO might not be buying or selling power (except perhaps during emergency situations from other countries). Therefore, decisions are needed as to what entity will be the guaranteed purchaser and whether the three month winter put option will still be offered to future HPPs.

The second issue is how the GOG will manage implementation agreements and MOUs in the future. There is limited capacity available for export compared to the numerous HPPs that are anticipated. Therefore, the question of how many additional new implementation agreements and MOUs to sign, how much connection capacity is

¹ There are also “MOUs” in place that serve the same purpose as an implementation agreement. Parties are GoG, ESCO and HPP. Implementation Agreements are typically used for larger size projects and MOUs for smaller projects. An MOU in Georgia has more of a contractual framework of rights and obligations including penalties as compared to how the term MOU is often used elsewhere.

promised, and how to terminate implementation agreements where progress is not satisfactory are all policy issues that merit discussion.

GUARANTEED POWER PURCHASE AGREEMENT

Parties: HPP and ESCO

Purpose: This agreement provides the terms under which the HPP may, at its option, sell and ESCO will purchase electricity in the three winter months of the first ten years of plant operation (in accordance with the requirements of the Implementation agreement or MOU).

Current status: Certain information regarding ESCO's activities are shown on its web site. That site currently shows twenty two Memorandums with five Power Purchase Contracts. Details on signed power purchase contracts with specific HPPs are not public. ESCO informs us that as a rule every contractual arrangement has its own individual approach. In the majority of cases, at the beginning of every year the HPP enters an agreement with ESCO whether it will sell power to ESCO or to some other party during winter months. If sold to ESCO, the price is fixed at the amount agreed under the MOU.

There is no purchase obligation for ESCO in the other nine months in the year. If the HPP has excess generation, the electricity is automatically sold to ESCO with the standard conditions of the Direct Contract at the price envisaged by the legislation in force and under the Market Rules. Article 36 (2) (Newly Constructed Power Plants) of the the Market Rules define that in winter ESCO shall buy at the highest tariff of balancing electricity while in Summer for the lowest tariff set by GNERC².

²Article 36. Newly Built Power plant:

1. If the electricity, transmitted by newly built power plant at the receipt point has not been (fully or partly) purchased through the Direct Contract, signed in advance (including the Direct Contract, signed between the power plant owner eligible enterprise and System Commercial Operator, in compliance with the legislation in force and/or enactment of Georgian Government), the newly built power plant is considered as the seller of electricity to the System Commercial Operator, through the direct contract, composed under the Standard Conditions.
2. The System Commercial Operator buys the balance electricity and carries out the settlement with newly built power plant, within the scope of Direct Contract, composed under the Standard Conditions: a) From September 1 till May 1 of every calendar year, based on the Standard

Future changes: As ESCO transitions to an independent market operator role, consideration should be given to how to address ESCO's long term power purchase obligations.

CONNECTION AGREEMENT (FUTURE)

Parties: HPP and Transmission Licensee

Purpose: This agreement defines the rights and obligations of the parties with respect to connecting to the transmission system.

Current status: Connection provisions are incorporated into a Transmission and Dispatch Agreement ("TDA") and other provisions are included in Market Rules.

Future changes: The Transmission Grid Code draft that is currently under discussion at the working group level includes certain standards for generator connections. The concept of a connection agreement is referenced in the Transmission Grid Code, where the connection agreement includes the site-specific details for the HPP's connection to the transmission system. It seems that it would be useful to draft a template connection agreement as part of a package of agreements to be prepared to facilitate HPP development.

The connection agreement should include project specific sections that describe customer qualifications, connection capacity, commitment to provide connection capacity for export, Transco obligations for failure to provide services, and HPP take or pay obligations.

TRANSMISSION AND DISPATCH AGREEMENT

Parties: HPP, Transmission Licensee and ESCO

Purpose: This agreement addresses the transmission and dispatch of electricity from the HPP including:

- Grants the HPP the right to connect in accordance with market rules subject to satisfying relevant technical requirements and laws;

Conditions of Direct Contract, with the highest tariff (price) of electricity, sold to the System Commercial Operator by the electricity (capacity) generators, except the tariff of electricity, generated in the test mode of reserve capacity source; b) From May 1 till September 1 of every calendar year, with the tariff of those power plants that have the lowest regulated fixed tariff established by the Commission.

- Obligates the Service Providers to provide services and the HPP to take and pay for such services in accordance with Market Rules and applicable service fees;
- Defines take or pay obligations for the HPP to pay for services and for the Service Provider(s) to pay for loss of profits if the Service Provider does not provide the services;
- Establishes monthly generation volume quantities;
- Obligates the Transmission Licensee to provide sufficient capacity for to satisfy the HPP's export transactions;
- Provides for bank guarantees for the HPP's failure to pay service fees or the Service Provider's compensation to the HPP for failure to deliver services.

Current status: There are currently three signed TDAs totaling 1212 MW.

Future changes: With the anticipated transition to an infrastructure that includes a Transmission System Operator, Transmission Licensees (i.e. transmission owner) and Market Operator, the provisions of a TDA can be replaced with a transmission service agreement, market operations service agreement, and a connection agreement with appropriate references to the transmission grid code, market and tariffs. These agreements would be drafted in a manner to include such project specific provisions (for example, generation volume, export capacity, etc.) as required.

TRANSMISSION SERVICE AGREEMENT (FUTURE)

Parties: HPP and Transmission Licensee

Purpose: The transmission service agreement obligates the transmission service provider to provide service to the HPP and for the HPP to take and pay for that service in accordance with the rules and procedures in the transmission grid code and at the price specified in the transmission tariff. While a typical transmission service agreement is a standardized contract, we have also added certain project specific provisions shown in the last bullet below. Alternatively, these project specific provisions relating to transmission could be included in the Implementation agreement and/or Connection agreement.

Current status: There is not a transmission service agreement in the current contractual framework. The TDA now in use obligates the parties to operate in accordance with Market Rules and applicable laws, including the obligation for the Transco to provide transmission services and sufficient export capacity to satisfy the HPP's export transactions. It obligates the HPP to pay fees for transmission and dispatch service in accordance with applicable tariffs.

Future action: Draft a transmission service agreement template that includes provisions such as:

- States customer qualification for services
- Commits parties to provide and take and pay for transmission service
- Commits to the HPP to supply required information
- Provides contact information
- Incorporates Transmission Grid Code and Transmission Tariff reference

MARKET OPERATIONS (“MO”) SERVICE AGREEMENT (FUTURE)

Parties: HPP and Market Operator

Purpose: This is a service agreement that obligates the MO to provide market operation services and the HPP to take and pay for those services in accordance with the Market Rules and applicable tariffs.

Current status: There is not currently a Market Operations Service agreement included in the contracts signed by a new HPP. Instead, the Implementation agreement or MOU, as applicable, requires the HPP to abide by the Market Rules and obligates the HPP to sell electricity within Georgia for three winter months (with a put option to sell such electricity to ESCO at a specified price through a Guaranteed Power Purchase Agreement).

Future action: Draft a Market Operations Service agreement with the same type of qualification provisions as the transmission service agreement, incorporating the Market Rules by reference.

Discussion: ESCO is currently working on the transition to hourly settlement and revised Market Rules. In time, these will incorporate the concepts of Georgian Electricity Market Model (“GEMM”) 2015. This is a crucial effort for HPP projects. While this paper will not address Market Rule changes that will come about as a result of the transition to GEMM 2015, the MO service agreement will obligate HPPs to comply with any Market Rule changes as they take place.

ENERGY SUPPLY AGREEMENT

Parties: HPP and Turkish Importer

Purpose: This agreement describes the terms under which an HPP will sell to a Turkish importer.

Current Status: A template Energy Supply Agreement (“ESA”) has been drafted and is available as part of the USAID Hydropower Investment Project (“HIPP”). An “Overview of Energy Supply Agreement” dated March 14, 2013 is attached as Appendix 1 and is also available at www.hydropower.ge.

Future Action: The template ESA can be used as a starting point by Georgian HPPs and Turkish importers as the parties negotiate a final energy supply agreement.

HPP – CONSOLIDATOR AGREEMENT

Parties: HPP and Consolidator

Purpose: The function of a Consolidator is to aggregate electricity from several small HPPs to maximize the potential for profitable export transactions. Larger volumes would be more attractive to Turkish importers, and a Consolidator would presumably have more expertise in arranging such sales. A Consolidator agreement describes the terms under which a Consolidator would purchase electricity from one or more HPPs and resell to Turkish importer(s).

The key provisions of the template Consolidator agreement are:

- Consolidator buys electricity in accordance with a specified fixed price and monthly energy schedules;
- Daily and hourly schedules are prepared 10 days prior to each month;
- Purchases are take-or-pay, but the Consolidator is exempted for certain reasons including actions by the Transmission and/or Distribution Licensees (i.e. presumably actions to restrict exports);
- The HPP is exempt from its delivery obligations for force majeure reasons, including low water.

Current status: A template Consolidator agreement has been drafted as part of the HIPP project. This is attached as Appendix 2.

Future action: Entities may use the template Consolidator agreement as a starting point for negotiations.

Discussion: A Consolidator may export electricity, but is not permitted to sell electricity within Georgia under current legislation. It may be worthwhile to consider modifications to existing legislation that would ease these restrictions. The benefits of a Consolidator (primarily aggregating the output of small generators into a more substantial power supply with better ability to negotiate power sales agreements) would be present in both the domestic and export markets.

BORDER NODE POWER EXCHANGE AGREEMENT(“BNPX”) (FUTURE)

Parties: Border Node Power Exchange, Georgian and Turkish suppliers and customers using the power exchange; Georgian and Turkish transmission system operators and market operators.

Purpose: For the purpose of this document, the BNPX refers to a limited power exchange to facilitate day-ahead transactions at the border between Georgia and Turkey. This concept is offered as a way to increase the volume of transactions at the connection and optimize its use. The BNPX agreement would lay out the rules and procedures for participating in the power exchange.

Description: A power exchange is an organized marketplace for physical electricity transactions in the day-ahead or intraday market. Its scope can cover an entire country or have a more limited application. The goals of a power exchange are to³:

- Facilitate electricity trading - gather potential sellers and buyers using the interconnection for day-ahead transactions into a single market;
- Foster competition - bidding process;
- Ensure transparency – anonymous matching of bids and offers with public market clearing prices;
- Develop liquidity – active use of the power exchange will improve market liquidity;
- Establish the credibility of its price index – daily published prices are a useful tool for evaluating bilateral transactions;
- Reduce credit risk – power exchange's clearinghouse will be the counterparty to all transactions. The clearing house function is described in the Clearing House section below.

The BNPX established would accept bids and offers for day-ahead purchases and sales in both directions across the interconnection. Electricity would be delivered at the border with the exporting party responsible for transmission cost to the delivery point and the importing party responsible after the delivery point.

The BNPX would be informed by the Transmission System Operators (“TSOs”) in each country about the Available Transmission Capacity (“ATC”) for the following day. The BNPX would clear its market for cross border transactions up to the ATC volume. This could be done in two ways; either separate from the day-ahead auction administered by EPIAS, or integrated into the day-ahead auction.

³ “Role of Physical Power Exchanges in the Electricity Wholesale Market” Coralia Verdugo Penados October 8, 2008

In its simplest form, bidders would specify prices that include both interconnection capacity and energy. However, it may be valuable to conduct a two-part auction. That is, the first bid assumes unconstrained interconnection capacity followed by a second bid in the event of constrained interconnection. The benefit of a two-part auction is that the difference between the unconstrained and constrained clearing prices is the cost of congestion for that hour. That is a useful measure in the evaluation of the interconnection usage and value. It also may be used to calculate the congestion payments to the TSO depending on Georgian National Energy and Water Supply Regulatory Commission's ("GNERC") determination as to treatment of congestion revenues.

The BNPX offers a partial market coupling⁴ solution. While there is no day-ahead market in Georgia to permit full market coupling, the bids to the border node power exchange could be submitted on a schedule to be evaluated in the Turkish day-ahead market. Further, winning bidders will obtain interconnection capacity rights for cleared transactions as they would with implicit auctions. This eliminates the need for separate day-ahead explicit auctions for interconnection capacity. Additionally, the information gleaned from analysis of clearing prices and congestion cost will be very useful to participants in the day-ahead markets of both countries. Over time, the results in the power exchange market will influence activity and bidding behavior in the day-ahead market of the countries.

Current Status: There is not currently a BNPX in place in Georgia to perform the activities described above. If a BNPX is to be established, a BNPX agreement would be developed for participants. There are numerous power exchanges operating in Europe and sample participation agreements are readily available.

⁴ Market coupling involves the use of implicit auctions involving two or more power exchanges where bids and offers for imports/exports are evaluated simultaneously to produce optimum supply outcomes over the multiple markets. Winning bidders in implicit auctions obtain both the energy sale and connection capacity rights, eliminating the need for separate connection capacity auctions and energy transactions.

CLEARING HOUSE

Purpose: An electricity market clearinghouse is a financial institution that provides clearing and settlement services for electricity market and over the counter (“OTC”) transactions. A clearinghouse assumes the counterparty risk for a trade, thereby reducing the risk of a firm failing to perform its settlement obligations. It also reduces risk by:

- Netting offsetting transactions between multiple counterparties;
- Requiring collateral deposits;
- Providing independent valuation of trades and collateral;
- Monitoring the credit worthiness of the firms;
- Providing a guarantee fund that can be used to cover losses that exceed a defaulting firm's collateral on deposit.

Once a trade has been executed by two counterparties in a power exchange or OTC markets, the trade can be handed over to a clearing house which then steps between the two original traders' clearing firms and assumes the legal counterparty risk for the trade (“novation”).

A clearing house must be well capitalized and have strong risk management procedures as the clearing house takes on settlement risks.

Georgian Clearing House

A Georgian entity might elect to become a clearing house associated with the BNPX. However, the enabling legislation for creating such an entity is relatively new and specific regulations are not yet in place for a clearing house.

The functions of a clearinghouse in the Georgian securities market is conducted by the Central Depository. Under the Law of Georgia on “Securities Market” there is a central depository, which is a licensed legal entity. The Central Depository has account relationships with several commercial banks and makes clearing and settlement with the commercial banks and serves as an intermediary. The Central Depository is restricted to carrying out activities other than the activities connected with Central Depository and Securities Registrar as defined by the National Bank of Georgia.

The Law on Payment Systems and Payment Services, adopted in July 2012, will enable the creation of a clearing house in Georgia. The law is aimed at the support of effective functioning of payment systems throughout Georgia. It defines the principles of regulation and supervision of payment systems and payment services and regulates the issues connected with the financial collateral.

The law creates a payment system operator and payment system provider. The law includes the definition of terms, including clearing system. A clearing system is defined as a set of rules and standard procedures existing among three or more participants where a transfer order sent by participant is carried out and net positions are calculated among participants for payment. The calculation of net positions is based on the principle of an operator acting a counterparty in all buy and sell transactions.

The Payment System Law does not have any specific provisions for the payment system operator or provider to act as counterparty in electricity market transactions. The law states that clearing rules may be approved by secondary legislation adopted by the National Bank of Georgia. These rules have not yet been drafted. Therefore, secondary legislation would be needed to establish a functioning clearing house.

Apart from the current legal status, there is the question of what entity would establish a clearing house in Georgia. The Bank of Georgia or other banks would need to assess the risks of taking on counterparty risk in a volatile electricity market.

Turkish Clearing House Status

The clearing house situation is somewhat further along in Turkey, but is still developing. Currently PMUM, a department within TEIAS, operates the day-ahead market, the balancing power market, and the ancillary services market. PMUM is the central counterparty for day-ahead-market and balancing power market trades. A new entity, EPIAS (described more fully in the Selected Turkish Agreements section), will take over the PMUM role and will expand its function in the market. PMUM, and EPIAS in the future, act as the counterparty in the Turkish market.

Takasbank is the central settlement bank that acts on behalf of PMUM for all market operation related payments and collections. While Takasbank is a clearing house for the stock exchange and derivatives exchange, it is not a clearing house for the electricity market. The electricity market clearing and settlement role of Takasbank is described in the PMUM/EPIAS Arrangement section later in this document.

It is possible that EPIAS and/or Takasbank could take on the role of clearing house for the BNPX in the future. However, there are European power exchange operators and clearing houses that might play that role as well.

Combined Entity

It may be beneficial to consider a combined entity that might be formed involving Georgian, Turkish, and other parties to operate a BNPX and clearing house. If the concept is agreed to by Turkish and Georgian stakeholders, discussions could take

place with entities might have an interest in such activities. EPIAS, ESCO, Takasbank, Bank of Georgia, and an existing European commercial power exchange/clearing house could all consider some role. For example, European Commodity Clearing AG (ECC) and TEIAS signed a Memorandum of Understanding for cooperation on the establishment of a Turkish Energy Exchange in July, 2011. EEC is a power clearing house for a number of power exchanges in Europe. There is to be some interest for commercial clearing houses and market operators to become involved in the development.

Future Action

The initial step in the process would be to introduce the concept to Georgian working groups and their Turkish counterparts. If the working groups jointly determine that a BNPX is a beneficial path to pursue, then detailed studies should commence along with discussion of interested participants in the power exchange.

BALANCING RESPONSIBLE PARTY (“BRP”) AGREEMENT

Parties: Turkish importer and Turkish BRP, and potentially the HPP.

Discussion: This agreement is discussed in more detail in the Selected Turkish Agreements section because it is a Turkish requirement for the Turkish importer to either serve as its own Balance Responsible Party or be part of a Balance Responsible Group where a member of that group is the Balance Responsible Party.

The parties to a BRP agreement would be determined as the HPP project development moves forward. Regardless of whether the HPP is a party to the BRP agreement, the HPP would be involved to the extent that would have a strong financial interest to the extent it must pay for any delivery shortfalls.

It would seem to be an advantage for the HPP to sell to an importer that is part of a Balance Responsible Group that includes generation resources. This may improve the opportunity to negotiate provisions, in the event of non-delivery, that are more predictable than Turkish spot market prices.

On a related note, another means of reducing HPP non-delivery risk would be to contract with a Consolidator where the agreement might include increased generation by other HPPs within the group in the event of decreased generation by the HPP.

TRANSMISSION SYSTEM OPERATOR AGREEMENTS

TSO agreements with HPPs are described in the previous section (TDA, transmission service agreement, implementation agreement and connection agreement). This section addresses other TSO related agreements.

TRANSMISSION GRID CODE (FUTURE)

Parties: Transmission System Operator ⁵, Transmission Licensees, Distribution Licensees, ESCO, generators, customers, and any other entities using the transmission system.

Purpose: When complete, the transmission grid code will govern transmission activities in a manner that is largely consistent with transmission grid codes in Europe. This will facilitate future transactions with neighboring countries and, over time, with Europe. The transmission grid code includes chapters covering:

- General Conditions;
- Connection Code;
- Planning Code;
- Operating Code;
- Scheduling and Dispatch Code;
- Data and Information Exchange Code;
- Metering Code.

Current Status

The transmission grid code is currently in draft form and is being discussed and edited by a working group including MENR, GSE, Energotrans and ESCO. It is anticipated that it will be finalized in the near future.

⁵ The transmission grid code working group discussing the transmission grid code may elect to call this entity by a different name to be consistent with current legislation.

INTERCONNECTION OPERATION AGREEMENT (“IOA”)⁶

Parties: GSE, Energotrans and TEIAS.

Purpose: The IOA provides the technical parameters of operation and maintenance of the Borcka-Akhaltzikhe interconnection line between Georgia and Turkey and is intended to ensure implementation of electricity transfers as may be allocated to entities owning rights to use the interconnection capacity.

Description: The IOA states that the duties of the operators include:

- Provision of emergency assistance;
- Coordination of dispatch;
- Determination of operating limits;
- Maintenance of reliability and security;
- Exchange of information;
- Coordination of voltage and reactive power;
- Planning, scheduling and approval and monitoring of outages.

Provisions that are most relevant to HPPs are:

- The parties to the IOA determine export directions for each month annually;
- Available transmission capacity is determined annually and more often as required for relevant periods;
- The exporting party allocates interconnection capacity under its published rules;
- Monthly schedules are to be provided one week before the start of the month and may be changed on a day-ahead basis if acceptable to GSE, Energotrans and TEIAS.

Current Status: The IOA is in final draft form and is expected to be signed upon completion of the Borcka-Akhaltzikhe interconnection. GSE, Energotrans and TEIAS are in discussions concerning further detailed operational procedures to implement the agreement.

Discussion: It would seem beneficial to increase scheduling flexibility in order to encourage maximum use of the connection. This may improve revenue and economic efficiency. One way to do this is to permit day-ahead transactions. The current operational concepts for the interconnection are restricted in terms of day-ahead

⁶ The requirement to enter into the IOA is contained in an inter-governmental agreement “Cross-Border Electricity Trade via Borcka-Akhaltzikhe Interconnection Line”. This establishes the principles of trade across the interconnection line including, among other provisions, requirements to calculate available transmission capacity, providing the exporting country the right to allocate interconnection capacity and giving priority to renewable energy sources.

transactions. If day-ahead transactions associated with any of the transitional approaches are to be permitted, the following items would merit consideration:

- The IOA includes provisions for scheduling day-ahead transactions associated with monthly and annual transactions. It does not, however, include the concept of stand-alone day-ahead transactions;
- In a given month, export transactions are only permitted from the “exporting country” as determined for that month on a yearly basis between GSE and TEIAS. It is not hard to foresee circumstances when export direction can change during a month due to weather conditions, hydrology conditions, market conditions, etc. This is particularly true for day-ahead transactions.
- The concept of simultaneous contractual import and export transactions is not currently present. It is very possible that a long term transaction is flowing in one direction across the connection while a day-ahead transaction is flowing in the opposite direction. Both transactions can be carried out simultaneously, with the physical flow being the net of the two.

TRANSMISSION SYSTEM OPERATOR – MARKET OPERATOR AGREEMENT (FUTURE)

Parties: Transmission System Operator and Market Operator

Purpose: To define the rights and responsibilities of the TSO and MO in their mutual operations in electricity markets.

Description: The agreement would include, among other provisions:

- Description of responsibilities of each party;
- Provision of market and system information and validation of data;
- Definition of time frames for market activities;
- Cooperation in developing rules and procedures;
- Commitment to use of consistent terminology;
- Communication protocols;
- Treatment of confidential information;
- Actions during emergencies including alerts and trading restrictions;
- Code of conduct.

Future Action: Develop a draft TSO – MO agreement for discussion in working groups.

TSO – BORDER NODE POWER EXCHANGE AGREEMENT (FUTURE)

Parties: TSO and BNPX operator.

Purpose: To define the rights and responsibilities of the TSO and Border Node Power Exchange in their mutual operations in electricity markets.

Description: This agreement is similar in many respects to the TSO – MO agreement. In addition to the bullet points listed above, this agreement would include:

- Provision of daily available transmission capacity for power exchange related activities;
- Scheduling rules and procedures for export transactions resulting from power exchange auctions;
- Communications regarding daily available transmission capacity;
- Winning power exchange bidders to obtain connection capacity rights for the transaction;
- Liability provisions for either party causing schedule deviations.

MARKET OPERATOR AGREEMENTS

MO agreements with HPPs are described in the HPP Project Agreements section (Implementation agreement/MOU, Guaranteed Power Purchase agreement, Market Operations Service agreement). Further, the MO – TSO agreement is described in the Georgian Transmission System Operator section and the MO-. This section addresses other MO related agreements.

MARKET RULES

Parties: ESCO, TSO, Transmission Licensees, Distribution Licensees, generators, customers, and any other entities participating in the market.

Purpose: There are currently market rules in place. There is a working group including members of MENR, ESCO, and GSE considering modifications to the market rules. The first step is expected to incorporate hourly settlements into the rules and procedures. Ultimately, the market rules are expected to be consistent with GEMM 2015, including among other changes, a transparent hourly balancing market, an auction mechanism to allocate connection capacity for exports, and increased consistency with ENTSO-E rules and procedures.

Future Action: Continue development of market rules through the working group process consistent with GEMM 2015.

MO – BORDER NODE POWER EXCHANGE AGREEMENT

Parties: Border Node Power Exchange operator, EPIAS, MO, clearing house.

Purpose: The BNPX is an electronic trading platform for anonymous transactions at the Georgia-Turkey connection. The purpose of this agreement would be to ensure that the activities of the power exchange are fully coordinated with the activities of the market operators in each country. It would define the rights and obligations of the BNPX with regard to its participation in Georgian and Turkish markets and in compliance with applicable rules and procedures. Depending on the design of the BNPX, much of the contractual substance of the agreement will be contained in the market rules of both countries. For example, if the power exchange is to submit bids and offers into the Turkish day-ahead market, it must do so in compliance with the rules and procedures of that market.

The areas where the agreement would provide additional provisions beyond market rules and transmission grid code would include, among other provisions:

- Coordination of power exchange, which is running the electronic trading platform for transactions at the connection, and the market operator which is responsible for the overall operation of the market;
- Coordination of settlement and clearing house payments between market operators and the power exchange/clearing house.

Future Action: Upon agreement that a BNPX is to be implemented, agreements such as power exchange operating agreement and agreements with the TSOs and MOs would be drafted.

MARKET OPERATOR TO MARKET OPERATOR ARRANGEMENT (FUTURE)

Parties: ESCO and PMUM/ EPIAS

Purpose: To establish rules and procedures for transactions and coordination between the market operators in Georgia and Turkey. There are not any existing agreements in place between ESCO and PMUM/ EPIAS. The need for an agreement between market operators becomes apparent if the Georgia and Turkey establish a BNPX and/or evolve toward a market coupling approach. These activities would require coordinated activities between the Georgian and Turkish market operators. Prior to that time, the need for such an agreement would be dependent on the roles of the market operators in purchasing energy in emergencies, how occasional imbalances in market schedule will be handled between the two countries, whether there is participation in the balancing market of either country by the market operator.

Description: One approach for MO-MO coordination would be to adopt some of the codes that are established and/or under development in Europe. The Agency for the Cooperation of European Regulators ("ACER") intends to address inter-market operator activities through a "Framework Guidelines and Network Codes". One such framework guideline is balancing. ACER describes this network code as:

“The Network Code on Electricity Balancing shall set the minimum standards and requirements needed for a competitive, harmonised and effective EU-wide balancing market, concerning cross-border and market integration issues. In particular, it shall define the necessary level of harmonisation of the varying national balancing regime design elements, in order to foster European balancing market integration.”

The application of any specific elements in the ACER network code would need to take into account the specific circumstances of the asynchronous connection between Georgia and Turkey. The advantage, to the extent that many of the provisions might apply, is that it would provide a good framework for further integration into the European electricity markets.

Discussion: The MO-MO relationship, in part, could be influenced by the treatment of cross border imbalances. From a technical perspective, the asynchronous connection between Georgia and Turkey will likely result in reduced cross-border imbalances than two systems operating synchronously. The HVDC back-to-back substation can be operated in a manner to match physical flow across the interconnection to the scheduled volumes. As a result, for most hours, imbalances are not expected across the interconnection. In this respect, the situation is different than those European cross border connections that operate synchronously.

There will be hours, however, where the cross border physical flow does not match the day-ahead schedule. For example, a large generating unit trip or major transmission outage in Georgia might necessitate a reduction in exports. Similarly, congestion within the Turkish system caused by transmission line outages or higher than anticipated hydro plant output (causing congestion) might result in a reduction in imports as compared to the schedule.

In the case of such export restrictions, the Georgian HPP is not able to sell its scheduled electricity to its counterparty and the importer will not receive its contracted volume. The consequence is that the importer will buy intraday replacement power in Turkey and the HPP will, depending on the circumstance, reduce its output or sell the power in Georgia.

There are two means of mitigating this risk that are currently contemplated. These are:

- Negotiated ESA provisions, which will allocate risks between the HPP and importer. In the template ESA, the HPP is liable for generation and transmission failure in Georgia; and Buyer liable for transmission failure in Turkey. Parties will seek to recover transmission failure through agreements with TSOs. Parties are excused from liability for failure to deliver or accept under standard Force Majeure circumstances (Georgian Civil Code) and an Emergency Situation declared in Georgia or Turkey;

- Transmission agreement damages, which require the transmission system operator to compensate the HPP if the reason for the export reduction is the fault of the transmission operator. The difficulty that may arise is that this may be subject to dispute as to responsibility for the export reduction, leading to either negotiating a settlement or proving fault in court

The risk to the HPP remains if the cause for the export reduction is on the Georgian side of the connection and if the reduction is not the fault of the transmission system operator. For this circumstance, a potential solution would be for the market operator to include in the settlement process a means to protect the HPP from financial harm that it did not cause. This issue is addressed more fully in “Balancing and Imbalance Settlements Recommendations for Electricity Exports to Turkey” June 2012, USAID Hydropower Investment Promotion Project.

SELECTED TURKISH AGREEMENTS

TURKISH IMPORTER – BALANCING RESPONSIBLE PARTY (“BRP”) AGREEMENT

Parties: Turkish importer and Turkish BRP, and potentially the HPP.

Purpose: This agreement describes the terms under which a BRP would supply electricity to the Turkish importer in the event that the Georgian HPP did not meet its scheduled deliveries. The intent is to protect the Turkish importer from some of the financial risk of non-delivery. It would also, depending on the BRP and ESA contract terms, provide more price certainty to the HPP in the event of the HPP’s inability to deliver scheduled energy.

Turkish Requirement: Under Turkish rules and procedures, a Balance Responsible Party is responsible for settling any imbalances in the market with PMUM/EPIAS. Market participants may form a Balance Responsible Group, in which one market participant is designated as the Balance Responsible Party. That market participant takes over, on behalf of the other entities within the Balance Responsible Group, the financial liability to PMUM/EPIAS for the energy imbalance of the Balance Responsible Group. If a market participant is not part of a Balance Responsible Group, it is itself the Balance Responsible Party.

The Turkish importer would either be an individual Balance Responsible Party or part of a Balance Responsible Group. Depending on the makeup of any such Balance Responsible Group, the Turkish importer would either pay Turkish market prices for any

shortfalls in imports or rely on a generator in the Balance Responsible Group to increase its generation to make up the shortfall.

Current status: We are not aware of any BRP arrangements currently in place. However, as potential Georgian HPPs consider the means that they have to manage risks, a BRP arrangement might be advantageous. Further discussion of HPP risk is included below.

Discussion

The draft ESA and discussions with GSE and ESCO are helpful in understanding an HPP's risk if exports are reduced or curtailed. The major points are as follows:

- Any generation or transmission failure on the Georgian side is the liability of the Georgian HPP and any transmission failure on the Turkish side is the liability of the Turkish buyer;
- Force Majeure risks are defined in the Georgian Civil Code (limited to natural disasters, and military intervention, etc.)
- The draft ESA would excuse parties from liability for short periods of “emergency situations” and agreed maintenance outages.
- The TDA may include a compensation provision for those times that the Transmission Licensee does not provide applicable services (except for those conditions excluded by the TDA).

In summary, the HPP is not taking on financial liability to the Turkish importer if there are problems on the Turkish side of the border that result in reduced deliveries. The HPP is, however, at risk for receiving lower revenues in the Georgian market during those times than if it had been able to export the scheduled electricity. Further, the HPP is potentially at risk (depending on its ESA) to the Turkish importer if a problem on the Georgian side (for example, the outage of a large transmission line or generator) causes the curtailment and GSE does not pay compensation to the HPP.

The ESA negotiation will be critical in determining the non-delivery risk faced by the HPP. Finding a way to manage the risk of Turkish market price uncertainty for non-delivery (whether caused by the HPP or not) is essential. It also seems that discussions should continue among stakeholders to ensure that the settlement process protects HPPs from export curtailments that did not result from the HPP's failure to perform.

Future action: Review sample BRP agreements to assess the risk management potential in the event of non-delivery.

PMUM/EPIAS – TAKASBANK ARRANGEMENT

Parties: PMUM/EPIAS and Takasbank, market participants

Description: Istanbul Settlement and Custody Bank Inc., or Takasbank, provides clearing, cash and settlement services, custody services and investment banking services. Takasbank is the central counterparty of Turkish Derivatives exchange (Turkdex), which will merge with the Istanbul Stock Exchange under the Borsa Istanbul.

Takasbank does not however, act as a clearing house for the Turkish electricity market at this time. Takasbank is the “central reconciliation bank” used by PMUM (and in the future EPIAS) and electricity market participants for the purpose of making payments in the market. Within the scope of cash settlement services:

- “Market participants perform clearing transactions of the debt arising from the market activities by connecting the system of Takasbank;
- Market receivables are transferred automatically to the intermediary bank accounts the participants notified to Takasbank;
- The participants may query the information about receivable/payable arising from the market activities, default reports, and assignment and assurance information instantly from the system of Takasbank.”⁷

It is anticipated that Takasbank will perform the same services for EPIAS as it does for PMUM. It is also conceivable that at some point in the future Takasbank could become the clearing house and central counterparty for the Turkish electricity market.

PMUM – EPIAS TRANSITION

Description: PMUM, a department within TEIAS, currently operates the day-ahead market, the balancing power market, and the ancillary services market. PMUM is the central counterparty for day-ahead-market and balancing power market trades.

A new entity, EPIAS was created under Electricity Market Law No. 6446, published in March 2013. EPIAS will operate and act as clearing house for the day-ahead and intraday markets in Turkey. PMUM will continue to operate the balancing power and the ancillary services markets. EPIAS will be responsible for the financial settlement of each of these markets. Takasbank will continue to operate as the central settlement bank both for EPIAS and PMUM. The Istanbul stock exchange, which will take a stake in EPIAS, will trade derivatives.

The energy market regulator will be actively involved in setting up of EPIAS and in approving its technical operations and regulations.

⁷ Takasbank web site description

TURKISH IMPORTER MARKET ACTIVITIES

Description: PMUM/EPIAS is the Turkish market operator. TEIAS, as transmission system operator, carries out planning, dispatch and operation services in Turkey. TEIAS also owns and operates all transmission facilities in Turkey.

With respect to Georgian exporters, the Turkish importer is the entity that interacts directly with PMUM/EPIAS and TEIAS. The Turkish importer will be required to be registered as a wholesale entity within the Turkish electricity market and comply with TEIAS' transmission rules and procedures and PMUM/EPIAS market rules and procedures. Therefore, from an operational perspective, it is critical to harmonize the provisions of the ESA with respect to scheduling and other operational procedures with the rules and procedures in the Turkish electricity market. Therefore it is important that HPPs develop an understanding of the relevant Turkish market rules.

Information regarding the Turkish transmission activities and market rules is contained in "Turkish Electricity Market Review", November 30, 2012 by Deloitte Consulting as part of USAID's Hydropower Investment Project. This report is available at attached as Appendix 3 and is available at [.hydropower.ge](http://hydropower.ge).

Attachment 1- Overview of Energy Supply Agreement



Overview of Energy Supply Agreement Template

14 March 2013

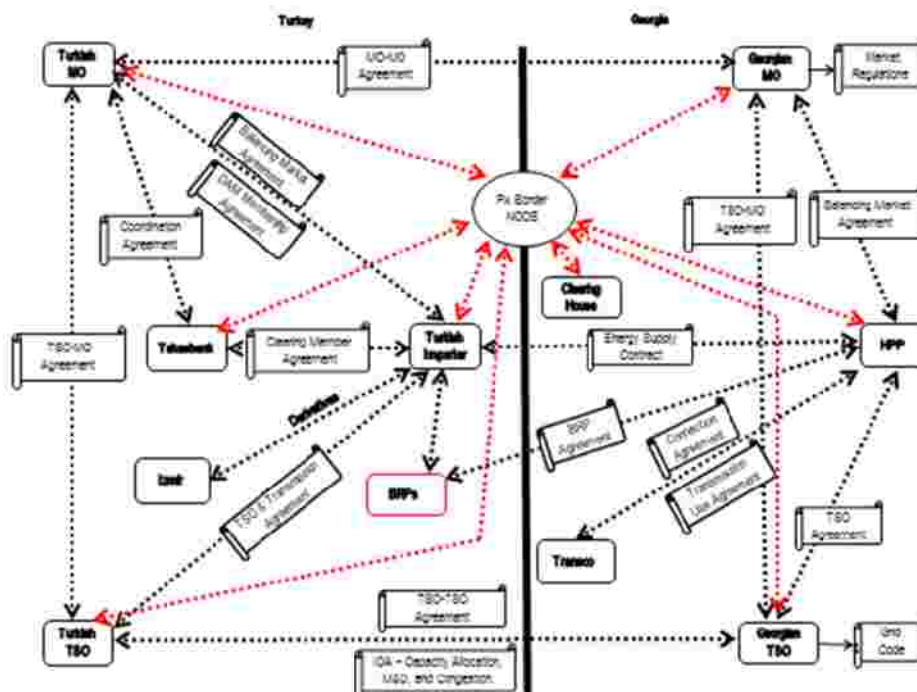
1a



Agenda

- GEMM 2015 Contractual Framework
- Main Features of the Electricity Supply Agreement (ESA) and the Transmission and Dispatch Agreement (TDA) Templates
- Discussion of ESA standard terms

2



Georgian Seller (HPP)-Foreign Buyer

- Export of electricity to foreign off-taker

Georgian Seller (HPP)-Georgian Transmission Companies

- Provision of transmission services and interconnection capacity

Georgian TSO- Foreign TSO Cross-Border

- Interconnection agreements (connection and operational issues) with each neighboring operator

Georgian MO- Foreign MO; Georgian MO-Georgian TSO

- covering coordination of data transfer

Georgian Seller – Foreign Balancing Responsible Party

- BRP agrees to generate electricity on short notice to cover any interruption of the flow into the receiving country

Georgian TSO-Georgian DSO

- covering the technical conditions of interconnection of Transmission and Distribution Systems with metering

Georgian TSO-Georgian Regulated Generators

- purchase ancillary services and electricity to cover TS losses; settlement and management of real-time imbalances

Georgian Transmission Companies-Georgian Generators

- covering the technical conditions for connection to the System, and metering

Georgian Transmission Companies -Market Participants for the provision of electricity transport service
Georgian Generator – Generator (Balancing Market Member)

- An agreement among generators to provide balancing services

Georgian Market Clearing House - Member

- prospective members agree to the rules applicable to clearing and settlement

5

Status of Current GEMM-Related Agreements

- Cross Border Electricity Trade Agreement between Governments of Georgia and Turkey, Jan 2012
- Interconnection Operation Agreement between TEIAS, GSE and EnergoTrans, draft waiting TEIAS signature
- MoUs between HPP investors and Government of Georgia where investor commits to construction schedule and not to export over 3 winter months
- Investors have begun to negotiate individual ESAs and TDAs, e.g. with inconsistent pricing and capacity allocation

6

Priority GEMM Agreement Templates to be Developed

- Electricity Supply Agreement
- Transmission and Dispatch Agreement
- Cross-Border Transmission System Operator Agreement

7

Key Features of ESA Template

- Template for use by HPPs located in Georgia and an Off-taker based in a neighboring country
- Consistent with law and approved by regulators in each country
- Ten or Twelve year term is necessary for HPP investor financing
- Parties agree each year in advance on monthly volume and capacity of electricity to be delivered and received under the ESA
 - Parties can adjust monthly volumes up or down by ten percent
- Accommodates day-ahead and intra-day scheduling
- Based on 2007 EFET General Agreement adopted now in Turkey
- Consent and construction milestones penalize HPP for delayed commercial operation start
 - consents include sufficient interconnection allocation and transmission service

8

Template Transmission Services Agreement

- Transmission Services should be non-discriminatory, equal rights for all transmission users
- Pricing should be transparent and consistent
 - The Agreement template should be adopted by the energy regulator
 - Liability should match liability in the ESA
 - Performance should be regulated in the license and the tariffs, not in the Agreement
 - Transmission rights should be in MW, not MWHs

9

Allocation of Interconnection Capacity

- Relates to all interconnections of the network
- HPP need long-term and near term interconnection capacity
- Some capacity should be allocated for the long-term
- Some capacity should be reserved for the short-term
- Capacity should always be put up for solicitation – TSO must show impartial selection of transmission rights on the interconnection

10

Consistent Features of the ESA and TDA

	ESA	TDA
Parties	HPP and Turkish Buyer	HPP and GSE, EnergoTrans
Primary Obligations	Cross-border Delivery and Acceptance	Cross-border Connection, Capacity, Transmission and Dispatch on domestic grid and Interconnection
Term	10-12 years	Same period?
Take or Pay	Yes	Yes
Compensation to HPP (Liability of other Party)	Any loss of Sales and additional expenses	Any loss of Sales plus liability to Buyer
Compensation to other party (HPP liability)	Extra cost of purchase from PMUM	Loss of service charge on quantity not delivered
Commercial Operation	All consents, agreements and construction complete	Same
Scheduling	Monthly moving to day ahead and intra-day	Same
Pricing	Agreed between parties	Transparent schedule of fees ¹¹

Contents of Draft ESA Template

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Discussion of Standard Terms of ESA

ESA - Definitions

- Delivery Point is the border between Georgia and the neighboring country along the interconnection line
- Seller is the HPP
- Buyer is the foreign off-taker
- Contract Quantity – volume agreed for each settlement period
- Contract Price – formula agreed in the ESA
- Settlement Period is one month – move to day ahead

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ESA – Schedule Contract Quantity

- Parties agree each year on Contract Quantity - monthly volume and capacity of delivery/acceptance, see table
- Parties may adjust volume up or down by ten percent

Table 10 – Year 10 2021/2022		
Month	Volume (MWh)	Maximum Hourly Capacity (MW)
April		
May		
June		
July		
August		
September		
Winter Month 1		
Winter Month 2		
Winter Month 3		
Total:		

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ESA - Scheduling

Current Situation

- Seller shall prepare an hourly schedule for every 24-hour period
- Submit to GSE not less than 4 days before start of each settlement period (month). Parties may amend not less than 2 days before.

GEMM 2015

- Parties may amend the hourly schedule up to 9:30pm the day before each 24 hour period – Day Ahead
- Parties may amend during the 24 hour period - Intraday

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ESA - Metering, Invoicing and Payment

- Metering in compliance with legislation and IOC
- Seller shall submit Receipt-Delivery Act (RDA), signed by Buyer, to GSE not less than 2 days before end of month
- Buyer submits RDA to TEIAS not less than 3 days before end of month
- Seller invoices Buyer in accordance with tax law and RDA Act not less than 5 days before end of month
- Payment due within 25 calendar days after end of month
- Penalty interest rate of 0.075% applied each day to unpaid amounts

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ESA - Failure to Deliver or Accept

- Contract is Take or Pay – Seller shall deliver and Buyer shall accept
- Seller liable for generation and transmission failure in Georgia; and Buyer liable for transmission failure in Turkey
 - Title and risk transferred at delivery point
 - Parties seek to recover transmission failure through agreements with TSOs – who will seek to recover from responsible market participant
- Parties excused liability for failure to deliver or accept under:
 - Standard Force Majeure circumstances (Georgian Civil Code)
 - Emergency Situation declared in Georgia or neighboring country
 - Should low water also be excused? No – part of HPP's risk
- Failure to deliver or accept
 - In absence of Force Majeure or Emergency Situation,
 - obliges non-performing party to compensate other party for any losses incurred buying non-delivered or selling non-accepted electricity from alternate market participants

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ESA – Pricing To be Determined by the Parties as a flat rate or pricing formula, e.g.

$$G_P + ((T_{FS} - G_P - C_S) / 2)$$

Where:

- G_P = (Georgian price to be agreed between the Parties per MWh of Contract Quantity for every Settlement Period)
- T_{FS} = the Turkish month ahead forward price for one MWh of Base Load Electricity for the particular Settlement Period, established and reported by the Turkish Derivatives Exchange (TURKDEX)
- C_S = Average transmission costs per MWh for the Settlement Period
 (Sum of transmission costs) / (Contract Quantity in MWh) over the particular Settlement Period
 Where transmission costs = total transmission, dispatch, allocation fees (including any compensation for transmission losses) incurred by the Seller for the delivery of the Contract Quantity from the hydro plant to the Delivery Point
- Should Buyer be liable for any future water use charges imposed by Government of Georgia?

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ESA - Preconditions

- Agree on Construction Milestones/Target Dates for
 - Consents Application
 - Financial Close
 - Technical rules
 - Construction Start
 - Commercial Operation (including relevant consents)
- Liquidated Damages for each day of delay for any target date paid by Seller to Buyer
- Seller provides Construction Letter of Credit
- If consents or commercial operation not achieved by given dates due to fault of government or TSO then Buyer may terminate agreement without receiving compensation
- Should Buyer be permitted to terminate if Seller does not¹⁹ achieve commercial operation within e.g. 180 days of target?

ESA - Representations and Certifications of each Party

- Duly organized according to relevant requirements with sufficient legal capacity
- No Material Reason for termination has occurred
- Negotiated as principal, acting for its own account
- Not insolvent and without adverse legal proceedings
- Does not exceed any maximum market share

ESA - Termination for Material Reason (Event of Default)

- A Party may give notice of an early Termination Date due to the continuing occurrence of a Material Reason (within 20 days of notice receipt)
- Material Reasons with respect to the other Party are:
 - Non-Performance: uncured failure to make a payment or perform material obligation or deliver Performance Assurance
 - Cross default and acceleration
 - Being wound-up or insolvency etc.
 - Failure to deliver or accept for more than 7 days in any 60 days
 - Force Majeure event continues longer than 30 days, or 60 days in 1 year
 - Mistaken or fraudulent representation or warranty

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ESA - Termination Amount Due to the Terminating party

The sum of the following amounts:

- All amounts otherwise payable between the parties, plus
- Any **Gain** to the terminating party (present value of economic benefit from termination)
- Less any **Costs** (all fees and costs entering into new arrangements)
- Less any **Losses** (present value of economic loss from termination)

Gains and Losses may be calculated (over current annual period or current settlement period?) without entering into replacement transactions

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ESA - Performance Assurance

- A Party may request a credit support document, e.g. guarantee, letter of credit, etc. at any time to address the other Party's credit risk.
- A Party may request, or request an increase in amount, from the other Party relating to credit support document if it believes a Material Adverse Change has occurred with respect to the other Party, i.e.:
 - Fall in their credit rating of relevant entity
 - Deterioration of financial covenants if entity not rated
 - Decline in their tangible net worth of relevant entity
 - Expiry or failure of performance assurance or credit support document
 - Other Party merges into a new entity weaker than original Party²³

ESA - Governing Law, Arbitration and Amendments

- Governing Language – English unless both Parties are Turkish
- Governing Law – Georgia and Turkey as relevant to applicable legislation or choice of Parties (Germany?)
- Arbitration – choice of Parties (Geneva?)
- Amendments permitted in writing, registered with dispatch licensee
- Parties may agree to amend any provision of the ESA that a change in law deems to be void, etc. (should this extend to impact on expected benefits?)
- Terms of the ESA are Confidential to the Parties²⁴

Attachment 2 - Template Consolidator Agreement

Direct Agreement on Electricity Export

Tbilisi

_____ 2013

On one hand, _____ (hereafter in the text “buyer – consolidator”) represented by _____ and on the other hand _____ (hereafter the “seller” in the text) represented by _____, by affixing signatures to the present agreement, acknowledge and agree on the following:

Definition of Basic Terms

Basic terms and concepts on electricity export provide in the present direct agreement shall have the following meanings:

Agreement – the present direct agreement executed between the parties on electricity export and all of its annexes;

Delivery point – physical point, in which the ownership right of the electricity delivered consistent with the present agreement, is transferred from the seller to the buyer-consolidator.

Balancing year – period, which starts from September 1 of the calendar year and ends on August 31 of the following year, as determined by the respective legislation.

Market Rules – Electricity (Capacity) Market Rules approved by the Ministry of Energy and Natural Resources of Georgia.

ESCO – JSC Electricity System Commercial Operator.

Export agreement – agreement which has been executed between the buyer-consolidator and the respective party and envisages export of electricity generated in Georgia outside its borders;

Concepts and terms provided in the present agreement are used with meanings as prescribed by the law of Georgia on Electricity and Natural Gas and the respective bylaw normative acts issued by the National Commission Regulating Energy and Natural Resources, with the exception when the term is clearly and directly construed in the present agreement.

Article 1. General Conditions

1.1. The present agreement regulates the terms, rules of selling electricity by the seller to the buyer-consolidator and associated financial and legal issues.

Article 2. The Subject of the Agreement

2.1. According to the agreement, the seller sells electricity and the buyer-consolidator assumes obligation to purchase electricity, for further export in the republic of Turkey and ensures full and timely compensation of its cost consistent with the price, rules and terms established by the present agreement.

2.2. Capacities of the electricity envisaged by the agreement (hereafter “export capacities”) during the balance year, per respective settlement periods (months) is provided in annex 1.

2.3. Capacities and cost of the electricity indicated in annex 1 during the balance year may not be amended, unless otherwise established in Article 6 and 7.1.5. In such case, the seller is obliged to notify the buyer-consolidator in writing on time and upon mutual consent, draw up respective supplementary covenant to the present agreement, which shall be put into effect upon its registration by the dispatch licensee in a duly manner.

2.4. Forecast schedules of the electricity to be delivered according to clause 2.2, also daily and hourly capacities of electricity to be delivered, shall be specified and agreed by the parties 10 days before the settlement period begins.

2.5. The term envisaged in Article 14.5 of the Market Rules apply to the capacities indicated in annex 1 of the present agreement, in particular, despite the incomplete export or complete failure to export of electricity, the buyer-consolidator is obliged to compensate the seller the full contractual cost of electricity delivered according to the present agreement which shall be calculated as the difference between the full contractual cost of electricity and the actual total cost of balance electricity sold by the seller to the SCO and or other party, if the balance is positive.

2.6. The buyer-consolidator is exempt from the obligation envisaged by clause 2.5 if generation of electricity to be delivered commensurate with annex 1 of the present agreement and/or supply of the generated electricity failed due to the following reason(s): due to action(s) and/or negligence of dispatch, transmission and distribution licensees also breakdowns in the transmission and/or distribution grid and/or repair-preventive works, low water and other force-majeure circumstances.

Article 3. Metering of Electricity

3.1. Electricity actually delivered by the seller to the buyer-consolidator consistent with the present agreement, should be metered and recorded by means of the settlement meters installed and maintained commensurate with the market rules which at the same time represent the “delivery point”.

3.2. The seller is obliged to inform the buyer-consolidator for the past 24 hour period, on daily basis, using any means of communication (email, telephone, fax, short message service) on capacities of electricity (in kWh) recorded by the electricity meters installed at the delivery points.

3.3. The seller is responsible for the delivery of electricity including its own power station transmission or distribution grid connecting busbars.

Article 4. Electricity Acceptance Certificate

4.1. The electricity sold on the basis of the present agreement is reflected in the hand-over act of electricity generation, expenditures and supply processed and authorized between the seller and respective entities according to the rules and terms established by the market rules.

4.2. Taking into account the data of the act indicated in clause 4.1., the seller shall submit to the buyer-consolidator duly processed and authorized bilateral act for affixing signature within 5 calendar days after the settlement period expires.

Article 5. Settlement Rule

5.1. The rule on preparing invoice and submitting is regulated by the tax legislation, whereby the invoice shall be issued on the basis of the bilateral acceptance certificate indicated in clause 4.2.

5.2. The cost of electricity supplied according to the present agreement is ____ tetris per kWh VAT exclusive.

5.3. According to the present agreement, the cost of electricity delivered per each settlement month is calculated by multiplying the cost of electricity provided in clause 5.2 (tetris/kWh) by the volume of electricity (kWh) recorded in the acceptance certificate for the respective settlement period and agreed by the parties.

5.4. The buyer-consolidator, no later than in 25 calendar days after receiving the respective settlement document, however, no later than before 30th date of the following settlement month is obliged to compensate the seller the cost of purchased electricity.

5.5. In case of disagreement with the data provided in the invoice, the authorized representatives of the buyer-consolidator and the seller shall immediately meet and try to regulate the issue. If the disagreement cannot be settled during 15 days after issuing the invoice, the buyer-consolidator or seller may file a case to resolve the dispute.

5.6. According to the terms of the present agreement, in case of failure to pay the cost of electricity and any associated payables, incomplete payment and/or violation of the payment term, the seller shall notify the buyer-consolidator and after 10 days from the receipt of such notification, in case of failure to recover the debt, the buyer-consolidator shall pay to the ____ % of the overall debt amount for each overdue day.

5.7. All payments envisaged by the present agreement should be transferred to the bank accounts of the seller and the buyer-consolidator indicated below.

Article 6. Force-Majeure

6.1. In the present agreement, insurmountable power or occurrence for either party means such event or circumstance which cannot be duly controlled by the given party; which cannot be prevented, stopped or improved, despite the due efforts of the given party, and as a result of which or due to which any of the party fails to perform its contractual obligations. The insurmountable power includes but is not limited to the following:

6.1. 1. The war, military actions, blockade, mobilization, requisition or embargo;

6.1.2. Rebellion, revolution, unrest, military and usurping authority or the civil war;

6.1.3. Violation of the public order, civil unrest, sabotage;

6.1.4. Terrorist acts;

6.1.5. Lightning, fire, explosion, storm, wind, flood, low water, earthquake, thunder and other natural disasters;

6.1.6. Technical breakdowns caused by the reasons indicated above, which significantly reduce the generation of the electricity.

6.2. In case of force-majeure circumstances, the affected party, which fails to perform its obligations commensurate with this agreement, shall immediately notify the other party on force-majeure occurrence. The notification shall include reasonable details of force-majeure circumstances, preliminary estimation of the affected liabilities, including the preliminarily calculated duration of possibility of performance of such liabilities and the other issues. Impact of the force majeure circumstances or termination of the agreement on the basis of force-majeure circumstances, does not exempt the buyer-consolidator from the obligation to pay the cost of electricity delivered before the occurrence of the force-majeure situation.

6.3. In the event the force-majeure circumstances last for more than 2 weeks, the parties are entitled to terminate the present agreement following the procedure prescribed in Article 9.4 of the present agreement.

6.4. In the event of insurmountable power, the party which is affected, shall immediately but no later than 10 business days, in writing, notify the other party on such power or occurrence with indication of facts and data, anticipated results and duration, and for the following 1 month, shall submit the respective document evidencing the insurmountable power issued by the Georgian chamber of trade and/or the respective authorized entity.

Article 7. Rights and Obligations of the Parties

7.1. The seller shall:

7.1.1. Deliver to the buyer-consolidator the volume of electricity determined by the present agreement, commensurate with the schedule provided in Annex 1 and the price indicated in the agreement;

7.1.2. Not terminate or suspend the agreement for the reason to sell electricity to the other party. At the same time, the seller is entitled, in agreement with the buyer consolidator, to sell the electricity generated above the maximal capacity envisaged by the present agreement to the third party.

7.1.3. In the event the seller executes the agreement with any third party and sells electricity without informing the buyer-consolidator on such, which might cause failure to perform the obligations assumed under the export agreement on behalf of the buyer-consolidator, the seller is obliged to compensate the buyer-consolidator all debts generated as a result of the indicated failure, among them those envisaged by the export agreement.

7.1.4. In the event the seller fails to perform the obligation indicated in clause 7.1.1. except for the reason of force-majeure circumstances indicated in Article 6 of the present agreement, for the purpose to avoid the damage, it shall immediately notify in writing the buyer-consolidator on such, so that the buyer-consolidator shall with its own forces fill the created gap from the other sources; Thereby, in such case, the seller is obliged to compensate the buyer-consolidator the additionally paid cost when purchasing electricity from the other source and/or ESCO, which shall be calculated as the difference between the cost of electricity determined by the present agreement and the cost of actually purchased electricity.

7.1.5. Immediately notify the buyer-consolidator on irregularities and curtailments created in the supply of electricity.

7.1.6. Use all available measures and efforts to keep all facilities under its possession or disposal in the operable conditions;

7.1.7. Immediately inform the buyer-consolidator on the necessity of conducting the urgent repair and preventive measures for the production facilities and also notify on partial or full cut off of power supply as a result of such works;

7.1.8. Prior to executing the agreement, or prior to its extension per rule envisaged by this agreement, shall in advance agree with the buyer-consolidator the schedule of planned repairs, which will be reflected in the power supply schedule (Annex 1), thereby, shall use all reasonable efforts to prevent planning of the repair works during the period of electricity export by the buyer-consolidator;

7.1.9. By the end of each settlement month, under the rule envisaged by the present agreement, together with the buyer-consolidator shall draw up the Certificate of Receipt consistent with the present agreement on the volume of the supplied electricity;

7.1.10. Due to the reason that the export agreement executed by and between the buyer-consolidator and the Turkish party envisages supply of electricity during ____ and according to the market rules, the balancing year covers the period from September 1 through September 1 of the following year, the seller is obliged to sell the electricity generated during ____ of the following balance year(s) to the buyer-consolidator for the price and terms determined by the present agreement and the relevant additional agreement shall be executed between the parties.

7.1.11. The seller is not exempt from the obligations envisaged in Article 7.1.1 and the terms envisaged in Article 7.1.3 shall apply to it if the reason of its failure to supply the electricity is caused by the failure of the respective distribution licensee to perform its obligations imposed by the law and/or failure of the buyer to perform the obligations assumed against it.

7.2. The Buyer-Consolidator shall:

7.2.1. Consistent with the terms of the present agreement, timely and fully pay the due amount to the seller;

7.2.2. Timely notify the seller on such irregularities and obstructions which partially or fully limit acceptance of the volume of electricity envisaged by the present agreement;

7.2.3. By the end of the settlement month, under the rule envisaged by the present agreement, together with the seller shall draw up the Certificate of Receipt consistent with the indicated agreement on the volume of the supplied electricity;

7.2.4. During the effective term of the present agreement, shall not establish such contractual relations for the electricity trading with the other party, which might affect purchase of electricity in volumes envisaged in Annex 1 from the seller;

7.3. Both the buyer-consolidator and the seller are obliged to maximally adhere to the least cost principle in the contractual relations, in order to avoid any kind of damage which may be incurred due to failure to generate the electricity and or failure to export the electricity.

Article 8. Dispute Resolution

8.1. The agreement should be executed and construed consistent with Georgian legislation.

8.2. The buyer-consolidator and the seller shall exercise all due measures to resolve all disputes or disagreements amicably, which may be arise with regard to the present agreement and or any other issue associated with the present agreement.

8.3. In the event the parties fail to reach the agreement, within 30 days after the dispute is arisen, any party, for the purpose to resolve the dispute, is entitled to address the court of Georgia according to the established rule.

Article 9. Effective Term of the Agreement and its Termination

9.1. The present agreement is enforced as a result of signing by the parties and registering on behalf of the electricity dispatch licensee according to the rule established by the legislation and shall be effective until November 1, 2013.

9.2. Expiration of the effective term of the agreement or its termination for any reason does not affect the obligation of performance of financial liabilities or responsibilities arisen before the termination of the agreement;

9.3. The agreement shall be automatically extended for one year if the parties do not agree one month in advance on its termination

9.4. The present agreement may be terminated prior to the date any time upon mutual written consent of the parties.

Article 10. Other Terms

10.1. If any provision of the present agreement or its part or its use against any party is not legal or its performance is impossible, all other provisions of the present agreement as reasonably possible shall be considered as effective and enforceable or shall be construed in a manner to maximally preserve the legitimacy of other provisions of the agreement and the possibility of their enforcement;

10.2. Performance of the terms of the present agreement is binding for the parties and for their legal successors. It is not permitted to assign the obligations envisaged by the present agreement to the other parties, without prior written consent of the other party.

10.3 All notifications related to this agreement or other written mails shall be made in writing and deemed as delivered at the addresses indicated below.

Buyer – Consolidator

_____, Georgia

E-mail: ____

Fax: _____

„Seller“:

„.....“

Georgia,.....

e-mail:

Fax:.....

10.4 Any modifications and addenda to this Agreement may be made based on the written agreement executed between the parties and shall be registered with the Dispatch Licensee.

10.5. The present Agreement is regulated and construed consistent with Georgian legislation..

10.6. The present Agreement has been drafted in four counterparts in Georgian each having equal legal value, each copy to be deposited by the parties, ESCO and Dispatch Licensee for registration.

Buyer - Consolidator	Seller

Annex 1

Electricity Export Direct Agreement Executed by and between and ... ___ in

1. Electricity (capacity) purchase forecast schedule from____, 2013 through ____ 2013 shall be identified as follows:

Month	Volume (kWh)
2013	
Total:	

Volumes identified in the Item 1 of this Annex are presumptive and the deviation is in the range of
of
of +/-10%.

Buyer - Consolidator	Seller

Annex 2

Supplementary Agreement

Between _____ and “---” Regarding the Direct Agreement on Export of Electricity
Executed on _____

1. In the forecast schedule of the electricity (capacity) purchase indicated in annex 1 to the direct Agreement on electricity export executed by and between _____ and “---”, the following capacities shall be additionally included for the period of _____, 2013 _____:

Month	Volume kWh
	2013

The capacities indicated in the present agreement are resumptive and the deviation is in the range of +/- 10 %.

2. The present supplementary Agreement N1 becomes effective as of the moment of its registration by the dispatch licensee and shall be effective until _____, 2014.
3. All other terms of the agreement shall remain intact. The present supplementary agreement is the inseparable part of the agreement and shall be construed together with it.

Attachment 3 - Turkish Electricity Market Review



USAID
FROM THE AMERICAN PEOPLE

Hydropower Investment
Promotion Project (HIPP)

TURKISH ELECTRICITY MARKET REVIEW

NOVEMBER 30, 2012



This publication was produced for review by the United States Agency for International Development. It was prepared by Deloitte Consulting.

TURKISH ELECTRICITY MARKET REVIEW

NOVEMBER 30, 2012

USAID HYDROPOWER INVESTMENT PROMOTION PROJECT
(HIPP)

CONTRACT NUMBER: EEM-I-00-07-00005-0

DELOITTE CONSULTING LLP.

USAID/CAUCASUS OFFICE OF ENERGY AND ENVIRONMENT

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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2. ABBREVIATIONS

Acronym	Definition	Acronym	Definition
BO	Built-Operate	MMS	Market Management System
BOT	Built-Operate-Transfer	MFSC	Market Financial Settlement Center
BPM	Balancing Power Market	NLDC	National Load Dispatch Center
BPMMS	BPM Management System	NPP	Nuclear Power Plant
BSR	Balancing and Settlement Regulation	OTC	Over the Counter
CEER	Council of European Energy Regulators	PFC	Primary Frequency Control
DAM	Day Ahead Market	REL	Renewable Energy Law
ECSEE	Energy Community South East Europe Treaty	RER	Renewable Energy Resources
EEL	Energy Efficiency Law	SBDK	The Balance Adjustment Factor
EFET	European Federation of Energy Traders	SBDT	The Balance Adjustment Amount
EML	Electricity Market Law	SGOF	System Day Ahead Price (FMCP)
EMRA	Energy Markets Regulatory Authority	SMP	System Marginal Price
ENTSO-E	European Network Transmission System Operators	TCAT	Auction Platform of TEIAS
EPIAS	Energy Market Operation Corporation	TPC	Transition Period Contracts
ESA	Electricity Sales Agreement	TEDAS	Turkish Electricity Distribution Company
EU	European Union	TEIAS	Turkish Electricity Transmission Company
EUAS	Energy Generation Company	TETAS	Turkish Electricity Wholesale Company
FMCP	Final Market Clearing Price	UMCP	Unconstrained Market Clearing Price
GL	Geothermal Law	VOB	TurkDex (Turkish Derivatives Exchange)
HEPPs	Hydro Electrical Power Plants	YEKDEM	Renewable Energy Resources Support Mechanism
ISE	Istanbul Stock Exchange	YGSMF	Unfulfilled System Marginal Price

3. INTRODUCTION

3.1 BACKGROUND OF THE PROJECT

Georgian energy sector has a huge potential for development and abounds with investment opportunities. The priority of the country is the utilization of ecologically pure energy resources - alternative, renewable, wind and solar energies, geothermal waters, biogases, etc. and Georgia has one of the largest untapped reserves of hydro-power in the world.

Electricity generation sector in Georgia is mostly privately owned and partially liberalized with full liberalization expected to be in place in the next 10 years. The government is improving its technical capacity to facilitate increased cross-border energy trade, harmonizing sector legislation and expanding interconnections in multiple directions. In order to attract investment into new HPPs with a capacity of up to 100 MW, Georgia passed a Renewable Energy Law in 2008. This Law makes clear the government's support for private sector construction, operation and ownership of HPPs under the principle of Build, Own and Operate (BOO). Highlights include levy-free third party access to the national grid, freedom to enter sales contracts using deregulated tariffs, and the right to export for nine months of the year.

For the purpose of supporting market-based initiatives to stimulate and secure international investment in Georgia's small and medium sized hydroelectric power market, Hydropower Investment Promotion Project (HIPP) funded by USAID was launched by 2010. Deloitte is representing USAID for the Hydropower Investment Promotion Program, and operating on behalf of Georgian Government, aiming to inform Turkish investors about specific cross border power investment opportunities between Georgia and Turkey. In order to evaluate long term cross border trading and especially off-take agreement opportunities between Georgia and Turkey, there is a need of deep knowledge about the Turkish electricity market. The Turkish electricity market, for which a very brief background information is given in the next section, is also undergoing significant reform process and the regulations, rules, structure is continuously changing. This report aims to present the details of the existing structure as how it would effect any market player trading with Georgia or a Georgian exporter into Turkish Market. Another aim of this report is to present the anticipated changes in the market structure for the mid-term (Next 1-3 years) and their effects on the trading environment with Georgia.

3.2 BACKGROUND OF TURKISH ELECTRICITY MARKET

Turkish electricity market, which is one of the cornerstones of economic development, was one of the fastest growing in the world, with an average of ca. 9% annual growth, in the last two years. There is a transition to a competitive electricity market structure in order to attract private sector investments and the market is experiencing a rapid growth and liberalization process.

Turkish Electricity Market Reform officially began on March 3, 2001 when Electricity Market Law (EML) No.4628 was enacted. This reform is also obviously very crucial for harmonization with EU legislations and energy regulations. The main objective of EML is to ensure the delivery of sufficient, good quality, low cost and environment-friendly electricity to consumers. In order to reach this objective, the Law points the development of a financially sound and transparent electricity market operating in a

competitive environment under provisions of civil law. It is for the most part compatible with the EU Electricity Directive of 2003.

The Turkish wholesale electricity market, at the present instance, consists of an organized day ahead market (DAM) operated by Market Operator (PMUM, a department inside TEIAS), a real-time system balancing and operational mechanism operated by Turkish Electricity Transmission Corporation (TEIAS) as the Transmission System Operator, and a bilateral contracts market. In addition, there is organized markets for procurement of ancillary services. Since December 2009, hourly settlement of imbalances has been done.

With the aim of establishing a well-functioning electricity market, privatizations are ongoing. Turkish Government have attempted to finalize distribution company tenders in 2010 and 2011; but the privatization process of some distribution companies is still continuing. On the generation side EUAS portfolio to be privatized is structured into 9 separate packages and 4 individual plants to be tendered separately; and Privatization Authority has recently announced the new tenders of 17 small HEPPs

Turkey has connected to ENTSO-E by the end of 2010, after test periods, currently synchronous parallel operation is conducted and monthly auctions are done for import/export activities. Other than Europe interconnections, Turkey also has interconnections with Georgia, Armenia, Iran, Iraq and Syria. Total amount imported to Turkey was 4.7 TWh and exported from Turkey was 3.8 TWh. International trade opportunities are expected to increase with developing market and increasing investments.

Undergoing a thorough liberalization, Turkish Electricity Market dynamics are constantly changing, and understanding the current aspects with expected structural changes carries utmost importance in designing cross-border trading mechanisms and establishing the needed environment for long-term contracts with off-takers among Turkish Electricity Market participants.

On the other hand, electricity demand has been growing impressively in line with economic developments, driven by industrialization and urbanization. This situation together with the population growth expectations shows a great potential in further electricity demand growth.

Due to global crisis, demand decreased in 2009 compared to 2008, however, this contraction did not continue in 2010 where demand increased by ca. 8% compared to 2009. Moreover, electricity demand has grown by ca. 9% in 2011 compared to 2010 and realized as 229 TWh in 2011. In addition to all these, the first three quarters of 2012 experienced more than ca. 7.4% of consumption growth.



Figure 1 - Gross Electricity Demand in Turkey (2000 – 2011)¹

Installed capacity in Turkey has increased by more than five times since 1984. Share of the thermal capacity increased gradually in the last decades. Among thermal power plants, lignite fuelled power plants had the highest share in 1984. However, a stable increase in the share of the natural gas-fired power plants resulted in the highest share to be in natural gas fuelled power plants, currently among all technologies.

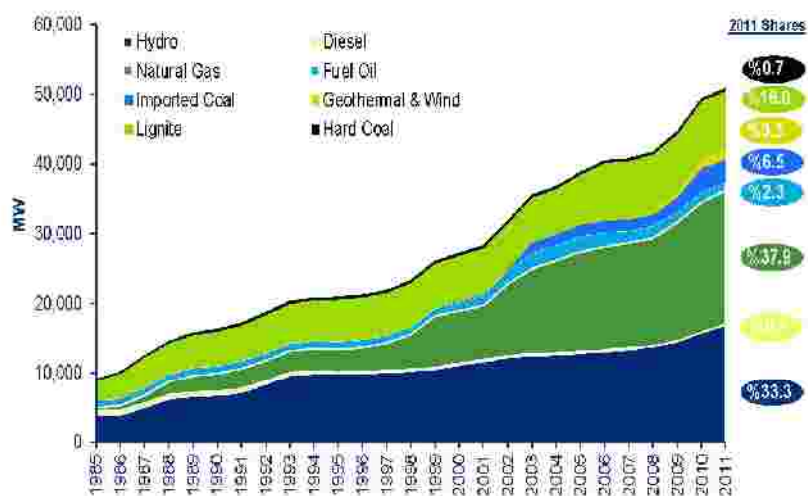


Figure 2 - Historical Installed Capacity by Primary Energy Resources (1984-2011)²

¹ Source: TEIAS, TurkStat

Currently, the highest share of the installed capacity in Turkey is thermal plants. As of July 2012, ca. 38% of total installed capacity is natural gas, ca. 16% lignite, ca. 2% fuel oil, ca. 7% imported and hard coal, ca. 4% of installed capacity is wind, geothermal and other renewables; however, due to substantial renewable energy resources and recent developments in renewable legislations and liberalization in the electricity market, there is a suitable environment for renewable investments. Share of hydro capacity is ca. 33%.

Within the scope of all these developments in Turkish Electricity Market this report aims to provide the required understanding of the further development in the market and its effect on import and export (trading in general) opportunities between Turkey and Georgia.

The upcoming sections in the report cover regulatory environment of Turkish Electricity Market, relevant legislation in the market, current market structure, balancing mechanism, operation of the elements in the market mechanism, system services, incentives for renewable resources, financial issues regarding the market, expectations regarding the future of the market, cross border trade mechanisms in Turkey, expectations regarding cross border trade, expectations regarding trade between Georgia and Turkey. All issues are discussed in detail with examples in order to enhance the understanding of the readers. Lastly, the report is finalized by discussing effect of these developments in the market and effect of expectations to trade between Georgia and Turkey.

4. CURRENT MARKET PRINCIPLES AND PROCEDURES – BIDDING, SCHEDULING, DISPATCHING AND SETTLEMENT

4.1 STRUCTURE OF TURKISH ELECTRICITY MARKET

The Turkish electricity sector is undergoing comprehensive reform and restructuring with a view to create a liberalized, efficient and economic sector. The market structure proposed under electricity regulations is coherent with the EU Internal Energy Market.

Likewise, it is important to be in line with, or at least direct the activities regarding the Standard Market Design, which is defined by the Council of European Energy Regulators (CEER) and European Federation of Energy Traders (EFET) as the Standard Market Design for Energy Community South East Europe Treaty (ECSEE), which Turkey is a member of.

The Turkish wholesale market is based on: a bilateral contracts market complemented by a balancing mechanism.

To achieve the objectives and principles of EML and Strategy Document, Balancing and Settlement Regulation for the transition period is prepared by National Transmission Grid Operator (TEIAS) and approved by EMRA and was fully operational as of August 1, 2006. This was the first and foremost important step from the Government for establishing price mechanism based on competitive market.

The BSR establishes the balancing & settlement regime which acts as a market where uncontracted generation can be bought and sold. The application enhances

⁷ Source: TEIAS.

security of supply by facilitating participation of independent and small generators. Balancing and settlement mechanism involves the target for the establishment of a spot market and provides signals to attract new investments.

Under the general framework of balancing & settlement regime there are several marketplaces, the most liquid one being the day-ahead auction mechanism. Regarding the day-ahead auction, on December 2011, day ahead market has been opened and transition to day ahead market from day ahead planning has been accomplished.

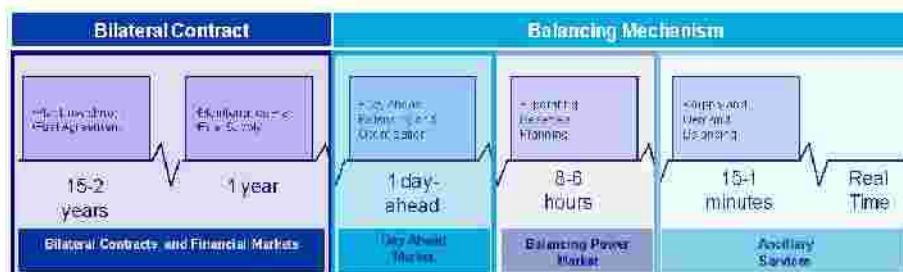


Figure 3 - Current Market Structure for Turkish Electricity Market

The Turkish wholesale electricity market, at the present instance, consists of an organized day ahead market operated by Market Operator (PMUM, department inside TEIAS), a real-time system balancing and operational mechanism operated by TEIAS as the Transmission System Operator, and a bilateral contracts market. In addition, there are organized markets for procurement of ancillary services. Currently, day ahead market has opened and has passed to the final stage. Since December 2009, hourly settlement of imbalances are being done.

Another enhancement to the market structure that has been introduced is an organized Financial Market that allows trading of derivative instruments with standard terms in addition to existing bilateral contracts.

Activation of the financial market provides investors opportunities to improve more effective risk reduction plans by financial protection. In the current system, monthly electricity contracts are being traded on Turkish Derivatives Exchange (TurkDex - VOB), however, operation volume (liquidity) is quite low. In addition to this, the contracts traded are only cash-settled. In other words there are no existing physically settled risk management instruments. Currently the power industry is requesting introduction of a Power Exchange where spot and derivative energy trading operations are handled under the same umbrella. This solution is expected to increase the liquidity in the derivatives market and also increase the transparency in the market.

Considerable work is going on in setting up of intra-day markets, OTC contract platforms, and independent energy exchanges. These new marketplaces are expected to increase the sales opportunities for merchant power plants and viabilities of new investment projects.

The figure below describes the market development since August, 2006, when the market opening has begun.

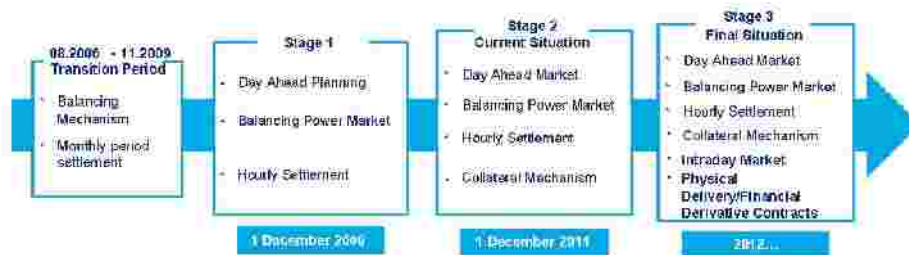


Figure 4 – Market Development Stages

4.2 BILATERAL CONTRACTS

Turkish wholesale market is, as previously described, based on i) a bilateral contracts market, complemented by ii) a balancing mechanism.

The design characteristics of the market support bilateral contracts between market participants. Currently, ca. 71% of total volume is composed of bilateral contracts and the remaining is the balancing market.

Transition/vesting contracts between EUAS/TETAS/TEDAS constitute the major portion of the bilateral contracts.

Practically three types of contracts exist:

1. Long Term PPAs between BO/BOT/TOR plants and TETAS
2. TPCs (Transition Period Contracts) between EUAS, TETAS and Distribution Companies. According to law these contracts are expected to expire by 2013.
3. Freely negotiated contracts between market participants and between market participants and eligible consumers

BO/BOT/TOR plants have long term sales agreements with TETAS, starting from 1989. BOTs are generally 15 and 20 years, BOs except Isken, are all CCGT and good for 15 years, TORs are good for 20 and 25 years.

Currently, TETAS (i.e. BO/BOT/TOR) generation represents ca. 9.2 GW (ca. 17% of total installed capacity) and 27% of Turkey's total electricity generation in 2011.

One particular characteristic of these contracts is that, ca. 85% of the total installed capacity of the Power Plants is to be bought by TETAS on take of pay basis with a contracted price.

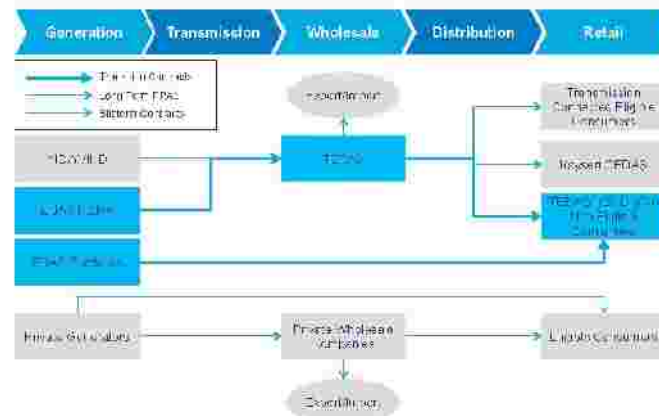


Figure 5- Bilateral Contracts Market, Energy Flow

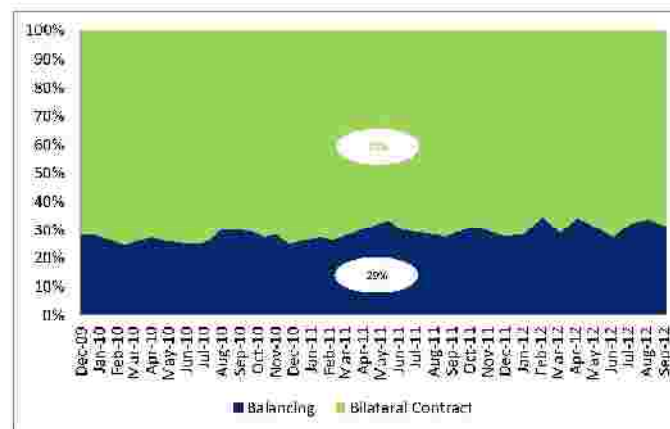


Figure 6- Bilateral Contracts vs. Balancing Market

4.3 BIDDING AND SCHEDULING IN DAY AHEAD MARKET

Overview of the Day Ahead Market

Day ahead market, which became effective on 1st December 2012, is the organized wholesale spot electricity market established for purchase and sale transactions of electricity to be delivered in the day ahead on the basis of settlement period (1 Hour) and that is operated by the Market Operator. It provides the opportunity to the market participants to balance their generations or/and consumptions and bilateral contract obligations, and thus supports the participants in the aim to provide a balanced system to the system operator at day ahead stage.

Day ahead market is commonly applied in various countries, especially in Europe. Turkish day ahead market design is very much similar to the energy market systems of Nordic countries, namely as Nordpool Spot which is the Market Operator and equivalent of MFSC (PMUM) in Norway, Sweden Denmark and Finland.

Bids/Offers in day ahead market are submitted on a portfolio basis. Participants are responsible for the balance of their whole portfolio and they are supposed to submit price-volume pairs for the whole of their power plant fleet, regardless of the plant composition. Furthermore, demand side participation is enabled in the day ahead market through wholesale companies or retail sales companies.

Market participants in day ahead market are defined by BSR as bearers of

- Generation license,
- Autoproducer license,
- Autoproducer group license,
- Wholesale license,
- Retail license.

Structure and Operation of the Day Ahead Market

Day Ahead Market Process, Roles and Timeline

Day ahead market is executed on a daily basis. In general the flow of the day ahead market process is as follows:

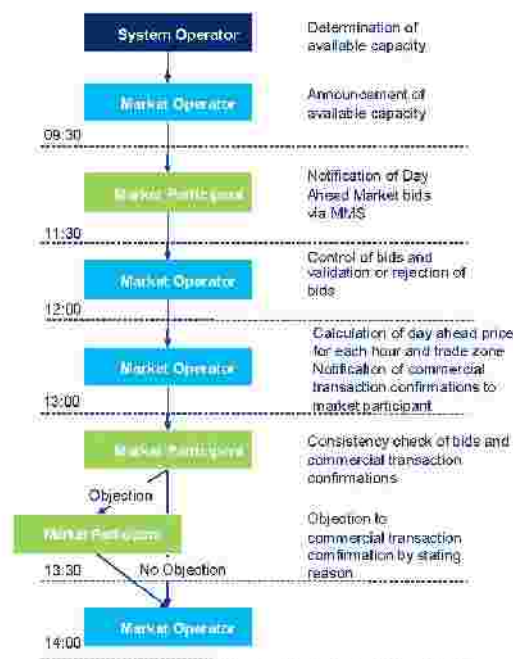


Figure 7 – Day Ahead Market Process

Daily procedure

By 9:30 am each day the Market Operator informs participants regarding hourly transmission capacity between the trade zones -if there are more than one trade zone- that are determined by the System Operator. (Currently, there is only one trade zone in Turkey, the whole country)

By 11:30 hours each day, market participants submit their bids/offers to the Market Operator through the Market Management System (MMS).

Every day, all bids/offers are verified or rejected by the Market Operator until 12:00 hours. Once validated the day ahead market bids/offers become official. In deciding whether to verify or reject, Market Operator checks whether collateral liabilities are satisfied or not.

- Between 12:00 and 13:00 each day, first, Market Operator calculates the price for the next day for every hour and every trade zone. Market Operator publishes the commercial transaction confirmations, which includes the day ahead market sales and purchase quantities of each market participant.
- Between 13:00 – 13:30 hours each day; market participants check the business transaction confirmations that are published and submit their objections to the Market Operator if they have any.
- Between 13:30 – 14:00 hours each day; Market Operator evaluates the objections and notify the market participants regarding the objection results.

Offer/Bid Structure

Within the scope of day ahead market, market participants can submit single hour, block and flexible bids/offers. Bids/offers in the day ahead market are submitted on a portfolio basis and only for the specific trade zones where related market participant generates or consumes electricity or owns bilateral contract notifications. The bids/offers consist of price and quantity pairs. All of the bid quantities are submitted in lots representing 0,1 MW and its folds.

Market participants are assumed to be able to fulfil all their bids/offers simultaneously, hence are expected to design their bid/offer mix accordingly.

Minimum price limit in the day ahead market is "0 TL/MWh" whereas the maximum limit is "2000 TL/MWh"

For a closer look, three types of bids/offers are presented below:

Single hour purchase bids or sales offers

Hours	Price (TL/MWh)									
	0	55	60	72	80	90	105	120	150	2000
00.00 – 01.00	1500	1500	1000	500	0	0	-400	-2500	-3500	-3500
07.00 – 08.00	3000	3000	2250	1500	0	0	-1000	-1000	-2000	-2000
16.00 – 17.00	3500	3500	3500	3500	2000	2000	0	-1500	-1500	-1500
23.00 – 00.00	1500	1500	1000	500	0	0	-400	-1500	-3500	-3500

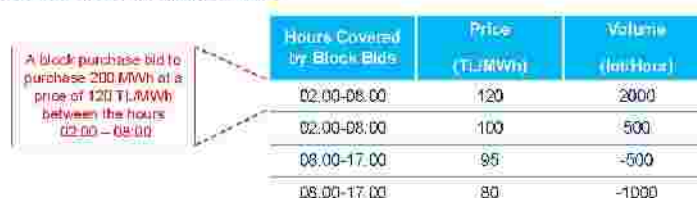
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Volumes are submitted in lots, representing 0,1 MW and its folds

Figure 6 – Single Hour Bids/Offers

Properties of the single hour bids/offers are as follows:

- Single hour bids/offers are subject to maximum and minimum price limits. Limits are the technical limits determined and published through MMS by the Market Operator.
- Each single hour purchase bid or sales offer submitted to day ahead market consists of at most 32 different levels of price-quantity pairs at each of purchase and sale directions.
- Prices are listed in an increasing order. Interval between two price quantity pairs is filled by the Market Operator, utilizing linear interpolation method.
- Positive values represents purchase whereas negative values represents sales.
- Purchase bids are determined in such a way that when purchase quantities are listed in an increasing order, the second one of the consecutive two purchase bid has a lower price than the first listed bid. Sales offers are determined in such a way that when sales quantities are listed in an increasing order, the second one of the consecutive two sales offers has a higher price than the first one.
- Market participants may have only one valid single hour purchase bids or sales offers for each price level.

Block purchase bids or sales offers



Hours Covered by Block Bids	Price (TL/MWh)	Volume (lot/Hours)
02:00-08:00	120	2000
02:00-08:00	100	-500
08:00-17:00	95	-500
08:00-17:00	80	-1000

Figure 7 – Block Bids/Offers

Properties of the block bids/offers are as follows:

- Cover a predefined period of time determined by the System Operator. Also, market participants have the right to offer their customized block bids/offers.
- Bids/offers may only be accepted for the entire period of time it covers and cannot be accepted for a time interval shorter than the time interval it spans. Market participants might be given the right to define their own block bids/offers through MMS, provided that block bids/offers that are determined in this way shall span at least 4 hours.
- Market participants are allowed to submit at most 50 block bids/offers in a day.

- Both purchase block bids or sale block offers are related to the same sales portfolio and trade zone and can be linked to each other if there are at most three block bids/offers. Out of three block bids/offers that are linked to each other in this way, first one may be accepted alone, second one may be accepted only in case the first one is accepted and the third one may be accepted again only in case the first two are accepted.

Block bids/offers present a substantial opportunity to the market participants by enabling non fractional utilization of the base load plants of the portfolio. Especially some thermal plants are designed to generate continuously for 24 hours, hence it is hard to risk this kind of a generation by submitting a single hour bid/offer.

Flexible sales offers

Flexible sales offers are the single hour sales offers that are not related to a certain hour and different from single hour purchase bids and sales offers.

Flexible offers allow market participants to utilize the flexible generation capacity such as hydroelectric in their portfolio in the peak hours.

Market participants in day ahead market only submit their offers and bids considering technical aspects of their plants as well as their marginal costs for its portfolio. That is, considering its generation and consumption facilities in its portfolio, the participants submit offers if it is economical to generate at that price, and can submit bid if it is more economical to purchase from the market instead of generating itself at that price level. Such an example is indicated in the following figure.

Price, TL/MWh	0	40	60	70	80	90	100	110	120	130	400	2000
Participant D, lot	1000	1000	500	500	200	0	-1000	-1000	-1000	-1000	-1000	-1000

Participant D (Generation Company)			
	Capacity (MW)	Marginal Cost (TL/MWh)	Explanation
Power Plant 1	50	80 TL/MWh	It is economical to generate if the price is higher than 80 TL/MWh
Power Plant 2	30	80 TL/MWh	It is economical to generate if the price is higher than 80 TL/MWh
Power Plant 3	20	90 TL/MWh	It is economical to generate if the price is higher than 90 TL/MWh
Power Plant 4	100	100 TL/MWh	It is economical to generate if the price is higher than 100 TL/MWh
TOTAL	200		
Bilateral Contracts	100		Signed 6 months sales contract with its customer

Figure 8 – Submitting Bids/Offers

For the above example, the generation company has 4 power plants in its portfolio, with its capacities and marginal costs indicated in the second and third column respectively. The company has bilateral contracts signed for 100 MWs, whereas its total capacity is 200 MWs. According to its marginal cost it submits bids/offers,

where if the price is 0 TL/MWh, it can purchase 100 MWs (1000 lots, amount in the bilateral contract) from the market, but if the price is more than 30 TL/MWh, it is more economical for him to generate 50 MWs (500 lots) in power plant 1 and purchase the remaining volume from the market.

Price Determination in Day Ahead Market

Day ahead price determination process is executed daily, between 12:00 – 13:00 hours each day for each hour in the following day. In brief, the price determination is the process of matching the hourly purchase bids and sale offers for all trade zones and calculation of the Market Clearing Price by considering all bids/offers submitted.

Day ahead market price is calculated in two virtual stages. Briefly, in the first stage, transmission constraints are not taken into consideration and Unconstrained Market Clearing Price (UMCP) is calculated. Then in the second stage, constraints are taken into consideration and price is recalculated as the Final Market Clearing Price (FMCP).

In the process of the price calculation:

- All the hourly sale offers consists of price-quantity pairs submitted to day ahead market for the relevant hour are listed in an increasing order and combined into one offer. Supply curve is formed by combining each price-quantity pair with the consequent price-quantity pair in the direction of increasing price, utilizing linear interpolation method.
- All the hourly purchase bids submitted to day ahead market for the relevant hour, are listed in a decreasing order of price starting from the price-quantity pair with highest price until the price-quantity pair with lowest price and combined into one bid. Demand curve is formed by combining each price-quantity pair with the consequent price-quantity pair in the direction of decreasing price, utilizing linear interpolation method.
- The intersection point of the demand and supply curves which are developed for every hour according to above items and where purchased and sold electricity energy quantities and transferred energy price are equal, the price that corresponds to the intersection point are determined.
- In the first stage, day ahead bids/offers which are submitted for all the trades zones are taken into account without considering the transmission constraints between zones and UMCP for every hour of the relevant day are calculated.
- Once UMCP are calculated, purchase and sales quantities for each trade zone at UMCP level and envisaged energy flow quantities between trade zones that are connected with lines with transmission constraints are determined. Note that when, envisaged flow quantities between zones are less than or equal to the available transmission capacities that is reserved for day ahead market, UMCP is determined as the FMCP for the related zones. When, envisaged flow quantities between zones are more than the available transmission capacities that are reserved for day ahead market, different FMCPs for each trade zone and for each hour are determined such that the transmission constraints between zones are removed. (Note: There is only one trade zone in Turkey; therefore, the second stage is not in use currently.)

- Block bids/offers are accepted when the below criteria are met:
- if the price determined by matching the hourly purchase bid and sales offer for the consecutive hours that block bid spans is equal to or higher than the related block sales offer price.
- if the price determined by matching the hourly purchase bid and sales offer for the consecutive hours that block bid spans is equal to or lower than the related block purchase bid price.

When the block bid/offer fulfills the criteria mentioned in items above, block bid/offer is accepted as a whole together with all time interval it spans.

Following figure shows an example where it is assumed there is a single trade zone and therefore UMCP is equal to the FMCP. There are four participants submitting purchase bids and sales offers to the day ahead market for hour 08:00 - 09:00, the Participant A and B being wholesale companies, Participant C an autoproducer company and Participant D a generation company. Comparing the total purchase and sales amount for the given prices, at price 90 TL, total sales and total purchase amount matches and

- Participant A gets 40 MWs purchase from the market,
- Participant B purchases 20 MWs from the market and
- Participant C sells 60 MW to the market.
- Participant D gets no instruction for that hour, because he offered to sell/purchase 0 MWs if price is 90 TL/MWh for that hour.

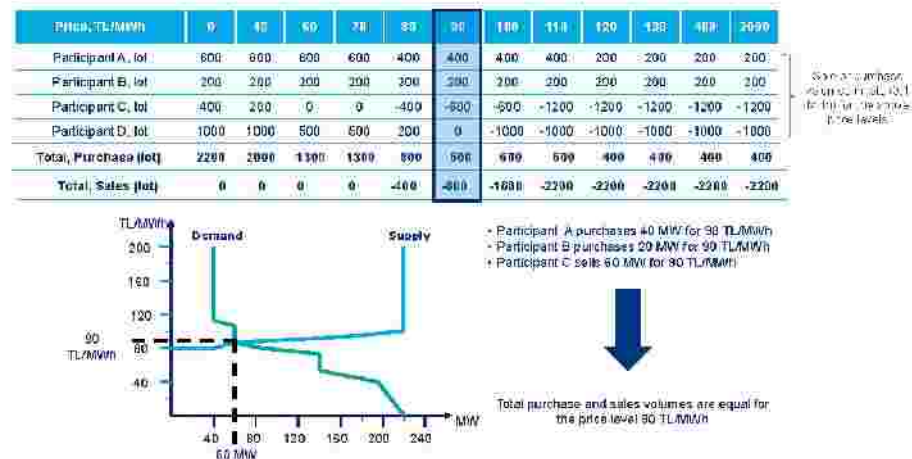


Figure 9 – Price Determination in Day Ahead Market

It may happen that envisaged flow quantities between zones are less than or equal to the available transmission capacities that is reserved for day ahead market, at this stage UMCP is determined as the FMCP for the related zones. When, envisaged flow quantities between zones are more than the available transmission capacities that are reserved for day ahead market, different FMCPs for each trade zone and for

each hour are determined such that the transmission constraints between zones are removed. Thus at the level of FMCP, purchase and sales quantities of each market participant within the context of day ahead market is determined and notified to market participants by commercial transaction confirmations.

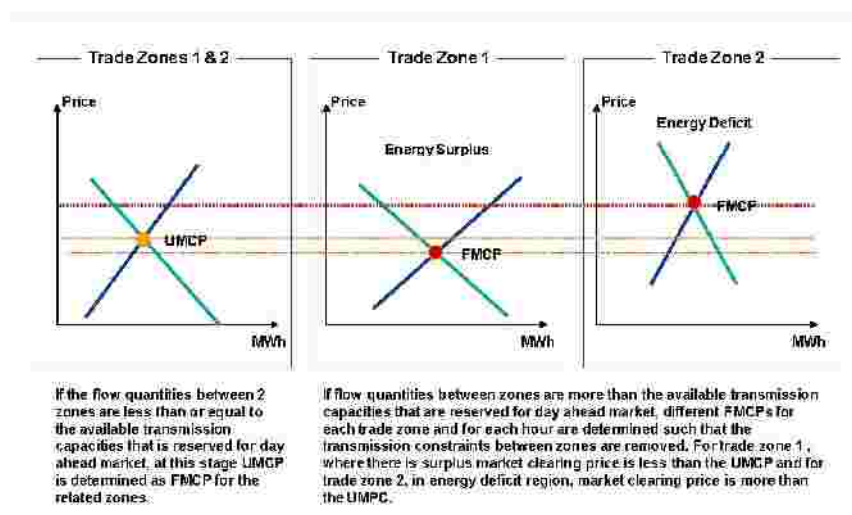


Figure 10 – Pricing in Trade Zones

In other words, for one or more trade zones, if the difference between purchase and sales quantities at the level of UMCP for the relevant trade zone is higher than the available transmission capacity that is reserved for day ahead market transactions, then flow between zones is diminished to a level that does not exceed the available transmission capacity reserved for day ahead market by decreasing the price of surplus zone and increasing the price of energy deficit zone, laying at each side of the constraint. Until the condition that requires purchase and sales quantities at the level of new market clearing price does not exceed the available transmission capacity that is reserved for day ahead market transactions, is satisfied for all trade zones, same steps are repeated. This operation shall be executed with the aim of fulfillment of energy flow from low price zones to high price zones and maintaining the minimum price that does not violate the transmission constraints in all zones considering all of the day ahead market bids/offers valid for the related trade zone.

4.4 BIDDING, SCHEDULING AND DISPATCHING IN BALANCING POWER MARKET

Overview of the Balancing Power Market

Balancing power market is designed as a mechanism to maintain the physical supply and demand equilibrium through a transparent market application. Balancing need essentially arises from market participants' inability to comply with their accepted bids/offers in the day ahead market. When day ahead market is closed and instructions related to market participants' bids/offers are issued by the market operator, the system is theoretically in balance, in other words, total generation meets the total consumption. However in the real time, market participants for some reason may produce below or above their daily generation and accepted bids/offers,

and thus create imbalances. These imbalances requires flexible producers or consumers who can load or deload the system in a short notice to balance the system. Balancing power market is the market application where bids/offers of these flexible producers or consumers submit their bids/offers in the day ahead, to be utilized in the real time.

Balancing power market is operated by NLDC (National Load Dispatch Center), also known as the System Operator.

Participation in the Balancing Power Market

Only those market participants who are regarded as balancing entities and who can independently load or de-load in 15 minutes notice can participate in the balancing power market. As the nature, balancing power market requires rapid response to load or deload instructions, type of generation technology is key from the point of view of electricity generators. Typically gas fired plants and hydro storage plants qualify the required generation flexibility in order to participate in the balancing power market.

Other market participants, who do not qualify for submitting bids/offers in terms of their generation or consumption flexibility (such as renewable generators) are also required to participate in the balancing power market, but they have to submit their finalized daily generation schedules rather than submitting bids/offers. For wholesale companies (exporters and importers) participation in Balancing Power Market is not possible under current market rules. Increased coordination and partnership between market operators and system operators of neighboring countries might pave the way for future merged balancing power markets in the region (Similar to centrally coordinated Regulating Power Market in Scandinavian Region).

Structure and Operation of the Balancing Power Market

Market participants which are registered in their own name and satisfy the conditions of being a balancing entity are required to participate in the balancing power market.

The market participants participating in balancing power market shall notify System Operator via BPMMS (Balancing Power Market Management System) regarding their hourly up and down regulation bid volumes and prices related to the generation/consumption increases or decreases they can realize in 15 minutes considering the maximum loading speed. Balancing power market transactions are executed daily on hourly basis as follows:



Figure 11 – Balancing Power Market Process

- BPM process begins at 14:00 hours each day, when the day ahead market activities are completed.
- By 16:00 hours each day; BPM participants notify the System Operator, of up regulation and down regulation bids and final daily generation schedules containing the hourly generation or consumption values.
- By 17:00 hours each day; the System Operator controls notifications regarding final day ahead generation/consumption schedules and participants up regulation and down regulation bids, thus, identifies whether any material error exists.
- By 17:00 hours each day; System Operator evaluates the offers and bids submitted in order to eliminate the existing or predictable short or long position in the system regarding the relevant day under the balancing power market and send the instructions for the accepted offers and bids to the related market participants. The notifications regarding the termination of instructions shall be made to the related market participants. Instructions are given taking into account the transmission system congestions, technical congestions of balancing entities in the balancing power market and security of supply and supply quality criteria.

Balancing power market instructions may be issued at any time of the related day, system marginal prices for each hour are determined in four hours time following the related hour and is announced to market participants by the System Operator.

Offer/Bid Structure

Each bid/offer, proposed to the balancing power market, is valid for a certain trading zone, certain day and a certain time interval through that day. In the bids and offers submitted to the balancing power market, all technically feasible capacity of the related balancing entity shall be proposed, on the condition that it will be conforming to the format of the bid/offer to be submitted. Technical requirement for the power

plant is not demanded separately but the minimum volume of offers and bids shall be 10 MW. All notified offer and bid volumes shall be expressed in terms of 1 MW and its multiples.

The market participants participating in balancing power market shall notify the System Operator, via BPMMS, of their hourly offers and bids relating to the generation/consumption increases or decreases they can fulfill in maximum 15 minutes.

Market participants in the balancing power market may notify up regulation and down regulation bids and offers at 15 volume levels, separately. The difference between the the highest and lowest bid/offer prices for the whole levels is determined by the Board decision; and current value of the difference is 20%. In other words, difference between the up regulation and down regulation bid/offer prices may be 20% at most, except for hydroelectric plants. Hydroelectric plants are allowed to notify bid/offer prices independent of this rule.

The bids and offers accepted in the balancing power market arises physical electricity supply or demand obligation for the related market participant.

Price Determination and Instructions

Offers and bids submitted by the market participants under the balancing power market are ranked by System Operator according to their prices. In case there is energy deficit in the system, maximum accepted hourly offer price applied to up-regulated balancing entities to correct this deficit in the system is accepted as the System Marginal Price (SMP). On the other hand, if there is energy surplus in the system, the minimum accepted bid price applied to down-regulated balancing entities to correct the energy surplus in the system for the purposes of balancing and irrespective of transmission system congestion, is accepted as the System Marginal Price (SMP). Instructions regarding balancing power market can be notified at any moment starting from the end of the bid submission period until the end of the relevant day and these instructions represent the change in output power which must be achieved by the related balancing entities within maximum 15 minutes after the related instruction is issued or from the start time of the instruction.

The system marginal prices in the balancing power market for each hour, shall be determined in four hours following the related hour and shall be announced to market participants by the System Operator.

The following Figure shows the relation of day ahead market and balancing power market prices, where there is energy deficit in the system and up-regulation instructions are given to the market participants and price calculated in balancing power market is higher than price calculated in day ahead market. Balancing Power Market price is used for settlement of imbalances also and this relationship gives the market participants incentive to trade into a balance on the day-ahead market in order not to be subject to the imbalance price.

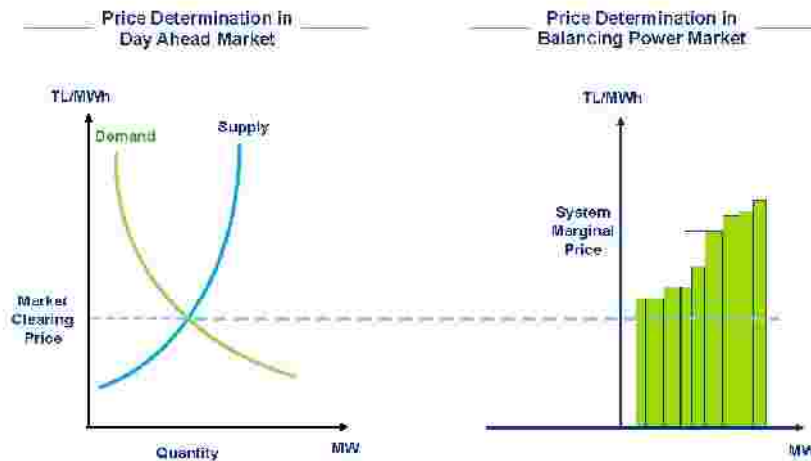


Figure 12 – Price Relationship between DAM and BPM

It is assumed that instructions issued by the System Operator within the framework of balancing power market correspond to a fixed supply or demand level between the start and end times.

Instructions issued for real time balancing of supply and demand, as a basis for settlement, are treated separately from other up-regulation and down-regulation instructions. Instructions given under balancing power market for balancing purposes are tagged with 0, for removing system constraints are tagged with 1 and for ancillary services are tagged with 2.

4.5 SETTLEMENT AND PAYMENTS

In the context of balancing and settlement regulation; settlement is the activities of calculating the amounts payable and receivable due to day ahead market, balancing power market and energy imbalances and of preparing the related payable-receivable notices for the participants by the Market Operator. Settlement period in Turkish Electricity Market is one hour. After settlement notices are sent to the participants, if the market participant is creditor, it sends invoice to the market operator. On the other hand, if it is debtor, Market Operator sends invoice to the market participant.

The settlement process of the balancing power market and imbalances are monthly realized according to the meter data received from TEIAS or distribution companies since calculation of imbalances is done with real meter data on hourly bases, whereas settlement of day ahead market results is daily.

The figure below illustrates the overall settlement process.

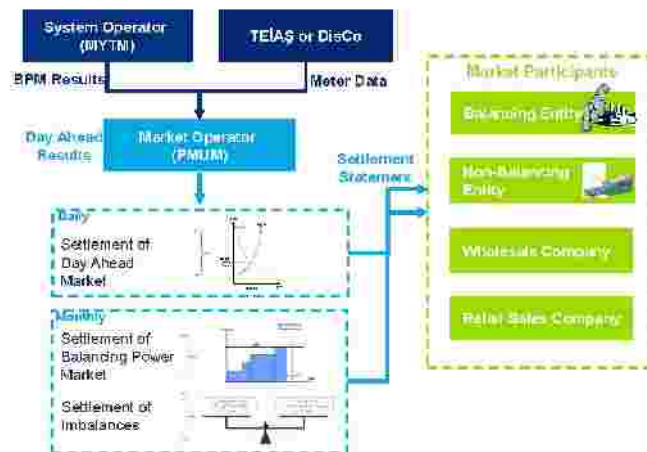


Figure 15- Settlement Process

Settlement of Day Ahead Market

As mentioned before, settlement of day ahead market is realized daily and payments are also done on a daily basis via advance payments mechanism.

The price used in settlement of day ahead market is the market clearing price, the reference price, determined separately for each hour within the scope of day ahead market. The amount of credit/debit of each participant is calculated by multiplying the relevant hourly market clearing price with the sales/purchase volume in day ahead market.

After day ahead market results are finalized total amount of system sale and system purchases done by a settlement aggregation entity for every hour is calculated. To calculate the amount of total sales of a specific settlement aggregation entity for a specific hour, following formulation is used:

$$= \text{Total System Sales} * \text{Market Clearing Price}$$

To find the amount of total purchases of a specific settlement aggregation entity done for a specific hour, following formulation is used:

$$= \text{Total System Purchases} * \text{Market Clearing Price}$$

Last step is to sum up the total amounts for every hour and find the daily sales and purchases that will be notified to the market participant.

Advance Payments Mechanism

As mentioned before, payables/receivables payments regarding day ahead market activities are made on daily basis; whereas, payables/receivables payments regarding balancing power market and imbalances are made on monthly basis. Payments regarding day ahead market activities are conducted through advance payments mechanism, in which payments are done according to the results determined from the day ahead. Advance payments are not invoiced; but advance payment notifications are published every day. At the end of each month, sum of daily advance payments are ranked as an item in the invoice, but no payments are done regarding them (since daily payments are performed within the month).

Process of daily advance payments mechanism is shown in the following figure:



Figure 13 – Daily Advance Payments Process

Settlement of Balancing Power Market

Settlement of balancing power market is realized monthly and payments are done on a monthly basis via monthly invoices.

In balancing power market, the instructions do not have to be for full hour, partially taken instructions can be possible as well. To be more precise, a balancing unit having 20 MW offer for a specific hour might actually generate electricity for half an hour. In this case, the total amount to be settled will be;

$$= 20 \text{ MW} * 30 \text{ min} / 60 \text{ min} = 10 \text{ MW (total amount to be settled for that specific hour)}$$

First step in settlement of balancing power market is that according to the actual duration of the instruction, the total amount of instructions are calculated. In this calculation, if the balancing unit is connected via the transmission grid, then the transmission losses are deducted from calculated total amount.

The prices used in settlement of balancing power market are the system marginal price and the up-regulation and down-regulation bid/offer prices of the participants. Below, determination of the settlement price of balancing power market is displayed in detail:

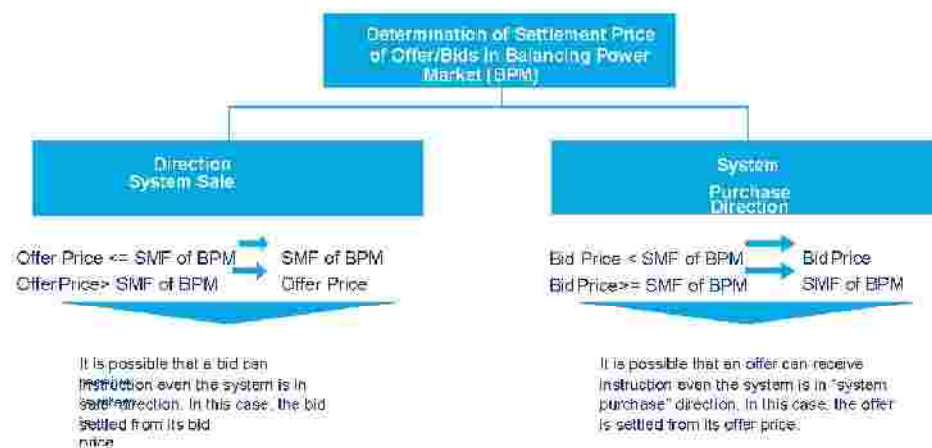


Figure 14 – Determination of Settlement Price in BPM

After settlement price is determined, for every hour and for each settlement aggregation entity, the instructions realized are multiplied by the related settlement price of the instruction. By this way, total amount of instructions are calculated for every hour and these amounts are added to find the daily and lastly to calculate the monthly amount that is going to be reflected to the invoice of the balancing units.

Settlement of Imbalances

Settlement of imbalances are calculated on balance responsible group basis. Energy Imbalance Volume (EDM) is the real time imbalance that the market participants have and calculated considering the real meter data send by TEIAS or distribution company. In spite of not receiving any instructions or being involved in balancing power market, a settlement aggregation entity is subject to imbalance settlement due to the day ahead market if a settlement aggregation entity does not obey its generation and consumption quantities determined in day ahead market.

Energy Imbalance Volume = (Energy Supply – Energy Withdrawal amount) ± Bilateral contracts + (Day Ahead System Purchase – Day Ahead System Sales amount) + (Balancing Power Market Down-Regulation - Up-Regulation amount)

By this way, the net energy that passes through the meter of market participant gives the energy imbalance volume.

The energy imbalance amount is settled over the system imbalance price which is determined by dual pricing mechanism, that is, system imbalance price is either equal to the system marginal price formed in balancing power market or system day ahead price (market clearing price) determined in day ahead market, according to the direction of the imbalance volume.

The formula below shows how to calculate the energy imbalance cost:

$$EDT_{it} = \sum_{k=1}^w \sum_{n=1}^n \left[\left(EDM_{i,n,k}(t) \times \max(SGOF_{i,n,k}, SMF_{i,n,k}) \times (1 + k) \right) \left(EDM_{i,n,k}(t) \times \min(SGOF_{i,n,k}, SMF_{i,n,k}) \times (1 - n) \right) \right]$$

Based on the formula written above;

- **Negative** values of energy imbalance amount (the energy purchase volume of balance responsible party from the system to remove energy imbalance) for the relevant settlement period is priced with maximum of market clearing price (represented as SGOF in the formula) or system marginal price (represented as SMF in the formula). In other words, the participants are forced to purchase energy with the maximum reference price in case of negative imbalances.
- **Positive** values of energy imbalance amount (the energy sales volume of balance responsible party to the system to remove energy imbalance) for the relevant settlement period is priced with minimum of market clearing price (represented as SGOF in the formula) or system marginal price (represented as SMF in the formula). In other words, the participants are forced to sell energy with the minimum reference price in case of positive imbalances.

It should be also clarified that energy imbalance volume is calculated for the whole portfolio that the market participant has and the total amount is reflected to the invoice.

The figure below shows an example of imbalance settlement for a balance responsible party:

	Participant 1	Participant 2	Participant 3	Participant 4
FDGS*	130	200	60	160
Meter	130	200	75	130
Imbalance	10	0	25	20
BRP**		$(10 + 25 + 20) = 15$		

* Final Daily Generation Schedule
 ** Balance Responsible Party



15 MWh imbalance is settled over minimum of market clearing price or system marginal price, indicating that the balance responsible party will sell the energy surplus from the minimum price.

Figure 15 – Settlement of Imbalances

As mentioned before, payments of the balancing power market and imbalances are monthly realized, whereas payments of day ahead market results is daily. Following figure shows monthly payments process. (Payment process of day ahead market activities is described later in advance payments mechanism section)



Figure 19 – Monthly Invoice Payments Process

Other Issues Related to Settlement

Penalty of not fulfilling BPM Instructions

A penalty mechanism is applied to participants in case they do not fulfill their obligations regarding BPM instructions. In this mechanism, in the scope of balancing power market, unfulfilled system marginal price (YGSMF) is determined towards the **accepted and fulfilled** instructions for each settlement hour that has an energy excess or deficit. If there is a difference between YGSMF and system marginal price calculated according to the instructions in the balancing power market; this difference is multiplied with the fulfilled instruction volume in order to calculate the

cost of not fulfilling the instructions. The cost is reflected to each relevant participant according to the ratio of unfulfilled instructions.

Net Residual Balance Adjustment Amount

Based on the principle that Market Operator would not make profit or lose money because of the operations done on behalf of wholesale electricity market; (excluding the energy sales and purchases performed by market participants under day ahead market, the market operation fee and non-paid receivables) during an invoicing period, the total of credits to be accrued on market participants shall be equal to the total of debits regarding the settlement of balancing mechanism and imbalance settlement of balance responsible parties. When the balance between the credits and debits are lost, "net residual balance adjustment amount" is formed and with the balance adjustment factor this amount is reflected to market participants invoices as "credit" or "debit" amounts. The balance adjustment factor in fact determines how much of the net residual balance will be reflected to the market participants.

Net residual balance can be calculated with the given formula below:

$$SBDT_f = SBDT \times SBDK_f$$

The balance adjustment factor (SBDK) written in the formula as a multiplier can be obtained by:

Balance Adjustment Factor = Market participant's total consumption / Whole consumption in the market

Retrospective Correction Factor

In the invoice period, in which a corrective action is taken (e.g. when meter data is corrected), all the settlement of imbalance operations are done again and correction is reflected to related market participants.

Market Operation Fee

Market operation fee is accrued from the market participants in order to cover operational expenditures made for the wholesale market operation including day ahead market, balancing power market and imbalances.

4.6 COLLATERAL STRUCTURE

As mentioned in previous sections, as of 01/12/2011, Market Operator started to receive collaterals from market participants for their liabilities arising from day ahead trade and settlement processes in order to provide continuous cash flow between market participants. In case of failure to provide the required collateral, market participants are not allowed to complete the relevant market activities.

General operations of collateral mechanism is displayed in the below figure. Takasbank, as central settlement bank is also a counterparty in the designed collateral mechanism, being responsible for the management of the cash flow between participants and collateral storage and cashing procedures as stated in the following process figure.



Figure 16— Collaterals Process

- Each day; Market operator calculates the collateral amounts which the market participants have to provide till 14:30 every day (D-1) and shall inform market participants and central settlement bank in participant-based. Central settlement bank executes the tracking of required amount of collateral of whose information is provided to him in participant basis.
- Market participants submit guarantee letters to Market Operator till 10:30 and other type of collaterals (e.g. cash, funds, bonds) to central settlement bank till 11:00 every day (D).
- For the margin calls done the day before the weekend or public days, market participants shall submit guarantee letters to Market Operator till 10:30 on the first working day following the weekend or public holiday, and other types of collaterals to central settlement bank till 11:00 on the first working day following the weekend or public holiday.
- Market Operator informs central settlement bank till 10:30 regarding the amount of guarantee letters which are submitted to him in participant-basis.
- Central settlement bank informs Market Operator till 11:00 regarding the amount of collaterals in participant-basis which are submitted by market participants.
- In case the minimum cash collateral amount and total amount of collateral submitted by a market participant in the scope of day ahead balancing activities falls below the required level, till 4:00 pm Market Operator makes a margin call to relevant market participant; for the guarantee letters to be completed till 10:30, for the other collaterals except guarantee letters to be completed till 11:00 in the following day.

Calculation of Total Collateral Amount

Total collateral amount that a market participant will submit is composed of three components; minimum collateral, day ahead market collateral and settlement of imbalances collateral.



$$\text{TOTAL COLLATERAL} = \text{Max (Day Ahead Collateral+ Settlement of Imbalances Collateral, Min Collateral)} \times \text{Collateral Increase Ratio (for risky participants)}$$

Figure 17 – Calculation of Total Collateral

Minimum Collateral

Fixed minimum collateral amounts are determined separately for retail, wholesale, generation and auto producer licensed companies. Below are the different levels of minimum collateral for each licensee:

- Wholesale: 200.000 TL
- Retail Sales: 200.000 TL
- Generation/ Autop / Autop. Gr. :
- 200.000 TL if installed capacity is 1000 MW or larger
- 10.000 TL if installed capacity is 50 MW or smaller
- MW x 200 TL if installed capacity is between 50 MW and 1000 MW

Day Ahead Market Collateral

Day ahead collateral amount is calculated as summation of net system amounts (system purchase amount – system sales amount) for the days in risk period. In general risk period covers 3 days, however if there is a holiday longer than 3 days, dates covered in the risk period increases and this is reflected to day ahead market collateral calculations.

Settlement of Imbalances Collateral

Imbalances collateral is calculated by considering the last imbalances of 3 months, in which all settlement calculations are completed. **Maximum monthly imbalance volume in the last 3 months** is multiplied by **maximum weighted average system marginal price in the last 3 months**. Finally, a risk coefficient determined by Market Operator is applied to the multiplication. Currently, risk coefficient is determined as 1.5.

Below is an example showing calculation of total collateral amount for a wholesale company.

Table 1 – Collateral Calculation Example

Minimum Collateral Amount = 200.000 TL				Imbalances Collateral Amount			
Day Ahead Collateral Amount				Month	1	2	3
Day	1	2	3	Monthly Imbalance(MWh)	100	300	400
Clearing Price(TL/MWh)	140	140	130	Maximum Imbalance (in the last 3 months (MWh)		400	
System Purchase Volume(MWh)	0	200	400	SMF_ORF (TL/MWh)	150	180	130
System Sales Volume(MWh)	100	100	200	SMF_MAX (TL/MWh)		180	
Collateral Amount (1000 TL)	0	14	28	Risk Coefficient		1,5	
Total Day Ahead Collateral		42.000 TL		Imbalances Collateral Amount(TL)	400 x 180 x 1,5 = 108.000		

For the convenience of the example, while calculating day ahead collateral amount, market clearing price of each hour is assumed to be equal. According to the above displayed minimum, day ahead balancing and settlement of imbalances collaterals, total collateral requirement of the participant is calculated as follows:

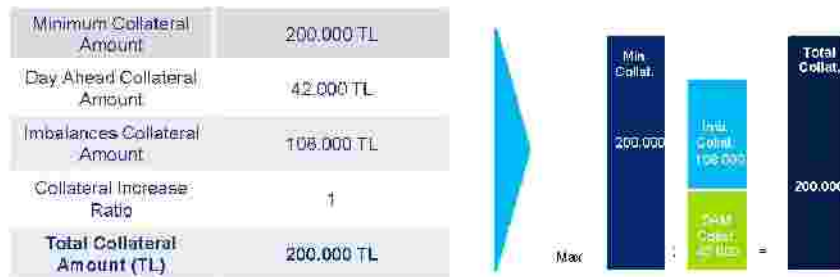


Figure 18 – Total Collateral Calculation Example

Daily schedule showing all of the market operations defined in this section is as follows:

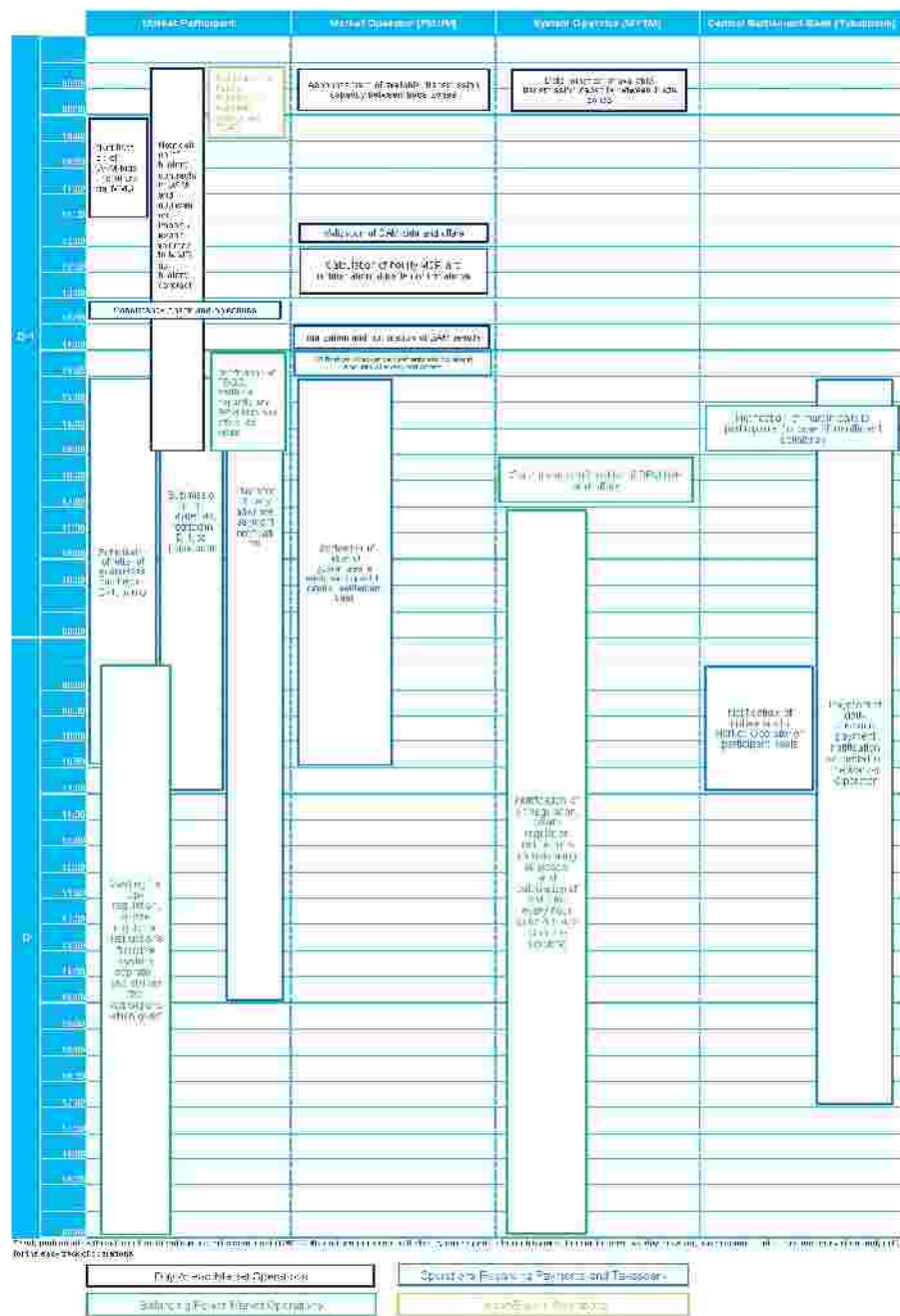


Figure 19 - Daily schedule of all operations conducted in Turkish Electricity Market

4.7 RENEWABLE ENERGY RESOURCES (RER) SUPPORT MECHANISM

Renewable Energy Resources Support Mechanism (YEKDEM) is the support mechanism, that defines principles and procedures regarding prices, periods and payments of legal entities that generates energy from renewable energy resources.

RER generation facilities with license that started operation after 18.05.2005 or before 31.12.2015 can make use of the mechanism for 10 years period, and legal entities or real persons having RER generation facilities without holding a license can make use of the mechanism for 10 years via DisCos in their region. Generation without a license is regulated with the relevant legislation and is currently limited to capacities 500 kW or smaller (It is under discussion to increase this limit to 1MW or even 2,5 MW).

According to the Renewable Law, renewable energy generators are granted a renewable energy resources certificate (the "RER Certificate") which entitle such facilities to benefit from the incentives provided by the Law. EMRA is the competent authority to grant the RER Certificates. RER certificate holders are eligible (but not obliged to) to participate in this mechanism on an annual basis, i.e., once participated they cannot leave the program during the year and participation in the program is allowed only at the beginning of each calendar year.

If mechanical or electronic equipment used in generation facilities commissioned before 31 December 2015 and that is subject to the RER Mechanism are manufactured in Turkey, then local equipment incentive will be added to the feed in tariff relevant to the renewable energy source. The incentive amounts are based on the type of the plant and the equipment used, and are defined in Table II in the appendix of the Law and will be added to the original feed in tariff.

For plants subject to the RER Support Mechanism that became active or that will become active during the period 18 April 2005 to 31 December 2015, the projected feed in tariff for the use of renewable energy resources for the next 10 years are in the following table:

Table 2 – Feed-in- tariff prices and domestic equipment usage incentives³

Fuel Type	Feed in Tariff	Max price that can be applied including the local equipment bonus** (USA \$cent/kWh)
Hydroelectric	7.3	$7.3+2.3=9.6$
Wind energy	7.3	$7.3+3.7=11.0$
Geothermal energy	10.5	$10.5+2.7=13.2$
Biomass (including landfill gas)	13.3	$13.3+5.6=18.9$
Solar energy (photovoltaic)	13.3	$13.3+6.7=20.0$
Solar energy (condensed)	13.3	$13.3+9.2=22.5$

³ Source: EMRA

[**] Feed-in tariff that will be applied in line with the Table I in the Law Appendix.

[**] Prices that are found by adding the amount defined in the Table II of the Law Appendix for use of equipments manufactured in Turkey to the price declared in Table I.

How does RER Support Mechanism work?

Procedures and principals of RER Support Mechanism are defined by the Renewable Energy Law:

- Each supplier, who sells electricity energy to the consumers has an obligation to pay a renewable energy fee proportional to the amount of electricity energy amount that this supplier sold to its consumers divided by the total electricity energy that all the suppliers sold to all consumers in the country. In other words, they are indirectly obliged to purchase electricity that is generated from renewable resources.
- The RER Support Mechanism work as follows;
 1. RER participant submits its hourly production estimation to the National Load Dispatch Center every day,
 2. MFSC receives the total hourly production estimates from NLDC and these are presented as a price independent offers on the day ahead market, on behalf of the RER Support Mechanism Portfolio. Then, MFSC calculates the RER amount that will be paid to RER participants based on the incentive prices and reports these amounts to the participants, each month. The RER amount is divided to suppliers proportionally with respect to their Payment Obligation ratios. Each participant sends an invoice to MFSC for the amount declared. MFSC distributes the calculated total RER amounts by adding the RER amounts for each participant in the ratio of each supplier's payment obligation.
 3. MFSC makes out an invoice to each supplier for; Payment Obligation minus RER Portfolio Income plus RER Energy Imbalance. Lastly, the supplier pays the bill amount to MFSC.

The following figure summarizes the calculation of the payment:



Figure 20 – Payment Procedure of YEKDEM

5. EXPECTATIONS OVER THE NEXT FEW YEARS REGARDING TURKISH ELECTRICITY MARKET

5.1 PRIVATIZATIONS

With the aim of establishing a well-functioning electricity market, generation and distribution privatizations have been started and are ongoing in the liberalization process.

In the process of privatization of distribution companies, in 2005, 20 out of 21 distribution companies (DisCo) were established as a subsidiary of TEDAS. TEDAS signed Transfer of Operating Rights (TOR) contract with these 20 companies in July 2006. According to this contract;

- Each DisCo took over the regional distribution system owned by TEDAS and the right to operate the distribution system for 30 years from TEDAS.
- The ownership and other essential components of the distribution system would belong to TEDAS. The systems would be transferred back to TEDAS after 30 years.
- Each DisCo would be the only company holding the distribution license in its own operating area for 30 years. These companies will also be given a retail sales license (currently DisCos are conducting retail sales activities based on the mentioned licenses).

The Privatization Administration started the privatization process in 2006. Before that, 3 regions were individually handled as concessionaries, operating rights for Kayseri, Menderes and Göksu were granted to private companies in 1990s and

Kayseri was transferred to KCETAS, however; Menderes was transferred to Bereket in 2007 and Göksu was transferred to AKEDAS in 2011 due to legal challenges.

Privatizations were expected to be finalized till 2011, but at present;

- 13 regions are currently operated by the private sector.
- 2 regions' transfer process is on-going.
- 3 regions' transfer process were cancelled.
- 3 regions' transfer process were restarted.

Current status and the relevant investors of each region can also be seen in the below table.

Table 3 – Privatization of Distribution Companies

Disco	Current Status	Investors
Başkent	transferred	Enerjisa - Verbund
Sakarya	transferred	Akcez
Meram	transferred	Alarko-Cengiz
Kayseri	transferred	KCE TAŞ
Osmanгази	transferred	Eti Gümüş
Yeşilirmak	transferred	Calik Enerji
Çoruh	transferred	Aksa Elektrik
Fırat	transferred	Aksa Elektrik
Çamlıbel	transferred	Kolin-Limak-Cengiz
Uludağ	transferred	Kolin-Limak-Cengiz
Trakya	transferred	IC Holding
Göksu	transferred	AKEDAS
Menderes	transferred	Bereket Enerji
Dicle	cancelled	Karavik-Ceylan Const. OGG
Vangölü	on-going	Aksa Elektrik
Boğaziçi	tenders restarted	-
Gediz	tenders restarted	-
Akdeniz	on-going	-
Aras	cancelled	-
Ayedağ	cancelled	-
Toroslar	cancelled	-

Divestment of EUAS power plants and portfolios will be a major game changer on the generation side. The privatization of more than 16 GW of 24 GW installed capacity belonging to EUAS and its subsidiaries is planned to be realized. For that purpose, Privatization Authority had taken a consulting services and determined a road map to be followed. Within this roadmap, the portfolio is structured into 9 separate packages and 4 individual plants to be tendered separately, which can be seen in the following figure.



Figure 2-1 – EUAS Portfolios and Power Plants to be Privatized

As a first step, the 1,120 MW Hamitabat natural gas plant was tendered in 2011. However, due to both a sluggish financial market and the technical specification and age of Hamitabat Plant, little interest aroused. In the tender, just one bid was placed and tender was cancelled. In 2012, a new tender was made and 4 bids were received; last day of bidding is January 14, 2013. Seyitömer (600 MW) and Kangal (457 MW) lignite plants have recently been involved in the program. Last day of bidding for these plants are determined as December 20, 2012 and January 17, 2013, respectively.

Similarly, privatizations of 52 small HEPPs were tendered in May, 2010 by Privatization Authority. High amounts were offered to the auctions which attracted great attention by the sector investors and tendered as groups. Group tenders resulting higher than 10,000 US\$ per MW were realized. However, similar with the distribution privatizations, some of the tender winners could not meet the financial obligations afterwards and their performance bonds were cashed in. As a result of that, certain groups privatizations have not been completed. As seen in the following table, tenders have been realized for 19 groups totaling 142 MW. Among them, the takeover process has been finalized for only 12 Groups. Transfer transactions of 10 Groups having a total of 100 MW have been currently completed, other groups are still included in EUAS since transfer transactions are not completed yet. For the ones that are not realized, bids have been collected and the process is on-going.

Table 4 - 52 Small HEPP Privatizations (Old Portfolio Groups and Realizations)

Group	Plants	Ins. Cap. (MW)	Takeover
1	Suuçtu - Dereköy - Cerrah	0.984	Realized
2	Hendek - Araklı - Bozöyük	0.80	Not Realized
3	Kayaköy	2.56	Not Realized
4	Kovada I - Kovada II	59.45	Realized
5	Finike	0.55	Realized
6	Anamur - Bozyazı - Derinçay - Silifke - Zeyne	2.87	Not Realized
7	Bozkır - Ermenek - Göksu	12.00	Not Realized
8	Dere - Iyız	1.64	Not Realized
9	Kayadibi	0.46	Realized
10	Binyan - Camardı - Pınarbaşı - Sızır	8.31	Realized
11	Değirmentepe - Karaçay - Kuzuculu	1.17	Realized
12	Koyulhisar - Ladik	0.60	Not Realized
13	Besni - Derme - Erkenek - Kernek	5.92	Realized
14	Bayburt - Çemişgezek - Giremik	3.55	Realized
15	Esendal - Işıklar	1.34	Not Realized
16	Çağ Çaç - Otluca - Uludere	16.32	Realized
17	Adıcevaz - Ahlat - Malezgirt - Varto	2.97	Realized
18	Engil - Erçiş - Hoşap - Köçköprü	17.64	Not Realized
19	Arpaçay - Kiti	2.82	Not Realized

Transition Period Contracts

As per Provisional Article 10 of 4628 numbered Electricity Market Law, the transition period contracts are in effect for 5 years and with the Energy Market Regulatory Authority's (EMRA) 05/03/2009 dated and 2001/20 numbered Board Decision, they have been prolonged for 2 years which sets the ultimate termination date as 31/12/2012. Transition Period Contracts are used for sale of electricity generated by Electricity Generation Company and its affiliates to Turkish Electricity Trade and Contracting Corporation (TETAS) and distribution companies. EUAS and its affiliates' generation represent approximately 40% of the total generation of Turkey as of 2011.

As stated above the current regulation sets the termination date as 31/12/2012 and currently no other regulation is under discussion regarding the extension of these contracts. As of today, it is almost clear that transition period contracts will legally end by the end of 2012.

For the upcoming year, it is expected that EUAS and its affiliates' will sell more than half of their generation to TETAS and TETAS will be responsible of supply to distribution companies. This expectation comes from the fact that the sheer size of EUAS portfolio would surely disrupt the market dynamics. For the sale of the rest, EUAS is known to be planning to perform auctions and also increased trading on the spot market namely Day Ahead Market.

Planned auctions are promising signals for market development and liberalization. At the beginning, it is estimated that the auctioned amount will be limited but in time, it is expected that the auctioned volume will gradually increase.

5.2 INTRADAY MARKET

Intraday Market is an "intermediate market" located between day ahead market and balancing power market, and a component of balancing mechanism aiming to decrease the possibility of imbalance by creating additional purchase and sale options for the participants. Following closure of the day ahead market, market participants will be able to find an opportunity to readjust their portfolios according to their individual generation/consumption situations or to the general situation of the system in intraday market. Intraday market is operated until a couple of hours before the delivery, with an option for participants to balance their portfolio in short term.

The time between the gate closure in day ahead market and physical delivery is too long for electricity which needs to be consumed simultaneously with the generation. Because of this, in addition to trading mechanisms, there should also be balancing mechanisms. In this sense, Intraday market is crucial for two things:

- Hourly operated day ahead markets have no difference than any ordinary trade market, so they do not consider all technical aspects of power plants. For this reason, there might be some operations in day ahead market which may cause 'impossible to be' generation programs. Intraday market helps to partially remove those operations.
- Intraday market helps to overcome with real time uncertainties, such as, power plant breakdown or changes in wind forecast.

Intraday markets are used widely in Europe, as an additional component of balancing mechanism. Establishment of a continuous trade intraday market in Turkey is expected in 2013. Design studies for Turkish intraday market, of which the mechanism is described below in detail, has been completed and relevant legislation draft has been prepared. Referred drafts are currently open to discussion with EMRA and studies to finalize the Regulation is going on. Furthermore, intraday market software development studies have also been started and the first version of the software is announced to market participants for testing purposes. Both legislation and software development studies will be continuing with regard to the feedbacks coming from the Regulator and the participants; as a result, intraday market in Turkey is expected to start financial operation within a couple of months.

Market Operator is expected to perform operation of intraday market in addition to day ahead market, administration of settlement and data publication activities, without discriminating among equal parties and in line with the principles of transparency and accountability.

Transactions regarding intraday market are expected to be executed on the basis of below principles:

- Intraday market transactions will be executed daily on an hourly basis. Each day consists of hourly time intervals starting at 00:00 and ending next day at 00:00.
- Purchase bids and sales offers that will be accepted in the intraday market incur the obligation of physical electricity supply and demand for the relevant market participant.
- The Market Operator will be a counterpart for each intraday market participant, for all the transactions concluded in the day ahead market.

- All operations in intraday market may occur at any time before 2 hours from physical delivery.
- Intraday market operations will be conducted by continuous trade method.

Expected design of intraday market mechanism is as follows:



Figure 22 – Intraday Market Process

As mentioned before, trade mechanism that is expected to be used in intraday market is “continuous trade” and bids/offers submitted to intraday market will be evaluated according to the collateral obligations of market participants. Intraday market is designed in a way that participants may submit single hour or block bids/offers; single hour bids/offers will be divisible and they may fully or partially match; whereas block bids/offers will either match for the whole time interval it spans or not matched at all. Minimum price limit in intraday market is expected to be zero and there will be no maximum price limit. After validation of bids/offers by the Market Operator, these bids/offers will automatically be sorted in the order book according to their direction, price and submission time.

Matching of the bids/offers in intraday market will be conducted automatically; that is, automatic matching will occur in case there are single hour bids/offers with the same volume and same or better price in the relevant hour, following the validation of all bids submitted; and price of the transaction will be equal to the price of the bid/offer sent to order book before the other. Each block bid/offer is either matched for the whole time interval it spans in case there is another block bid/offer with the same volume and same or better price for the relevant time interval. Below is a rough example showing automatic matching of the bids/offers in intraday market. When the hourly purchase bid, with price of 125 TL/MWh and 55 MW of volume, arrives it is automatically matched with the two sales offers waiting in the order book, since the arriving purchase bid has a better price and appropriate volume. First sales offer is matched fully, but the second one is matched partially (35 MW of the offer is matched). Since waiting sales offers are entered in the order book earlier, price of this matching is 100 TL/MWh.



Figure 23 – Matching in Intraday Market

Market Operator is expected to settle the results of intraday market.

Receivable/payable payments of intraday market are designed to be conducted on a daily basis, similar to day ahead market. An additional collateral item is expected to be placed in total collateral calculation; and an additional collateral control is expected to be conducted after day ahead market is closed and intraday market is opened, in order to allow participant an additional chance to balance their portfolio after day ahead market is closed.

The expected daily schedule will be as follows after Intraday Market is online:

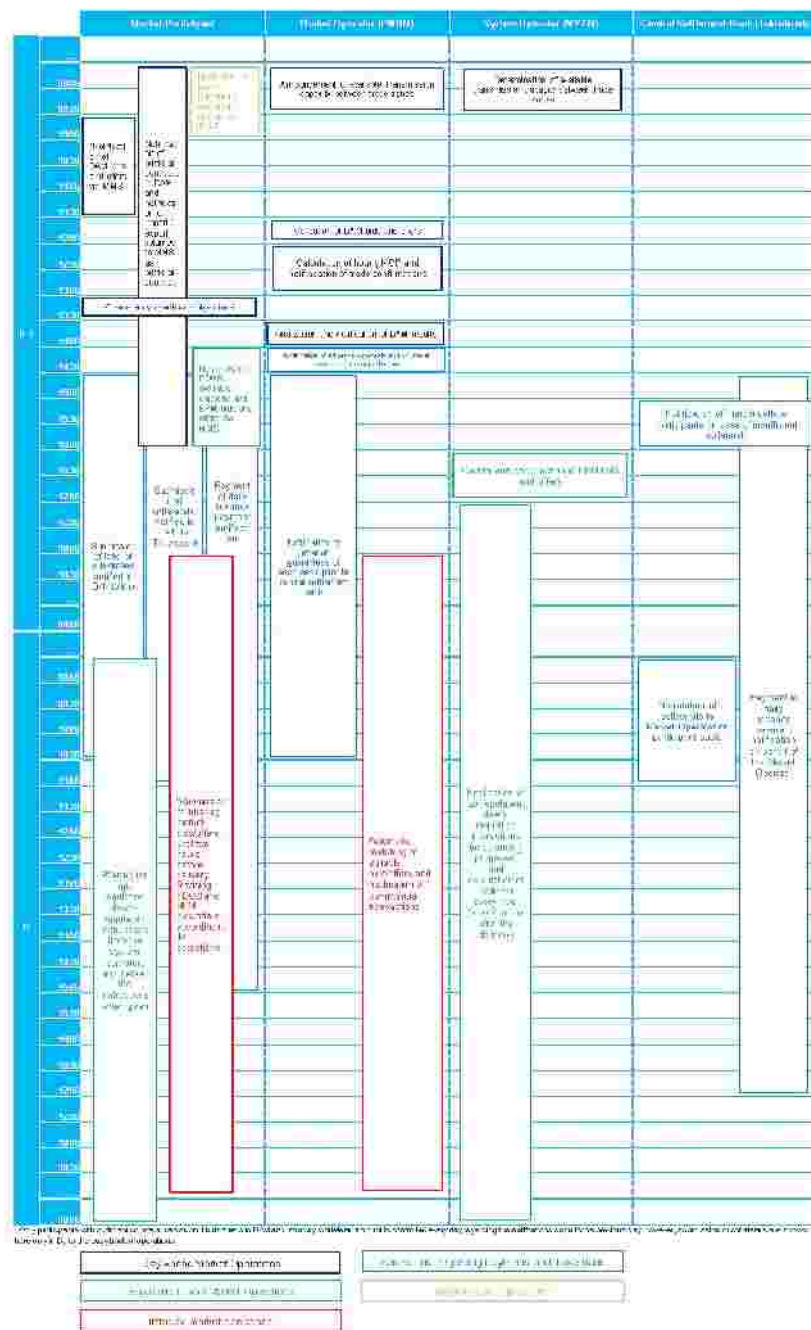


Figure 24 - Daily schedule of all market operations after Intraday Market is online

5.3 DERIVATIVES MARKET

Derivative contracts are financial instruments, which derive their value from that of an underlying asset. The main derivative products are; forward contracts, futures contracts, options and swaps. Forward contracts enable the user to buy or sell an asset at a specified future time at a price agreed upon date. Futures contracts, also, provide the same option for the owner. However, forward contracts are not generally traded on an exchange therefore, do not have interim partial payments, whereas futures do.

Electricity spot prices in the power markets are volatile as a result of the unique physical attributes of electricity production, transmission and distribution. To hedge against uncontrolled exposures, power derivatives capture complex structural characteristics of energy deals and assets, enabling effective management of price risks and other market risks. Additionally, the derivatives markets serve as a price signaling tool in the power system, allowing investors to monitor the profitability of new investments.

Establishment of electricity derivatives market has always been in the agenda within target Turkish electricity market structure. In addition to aforementioned advantages; by establishment of electricity derivatives market;

- Number of contracts and market volume will increase and reliable data regarding general trend of electricity prices and expected market price will be provided.
- Healthy cash flow will be provided through establishment of a market with broad participation.
- Mid and long term price forecasts will be signals for long term supply security. This will support the investors in finding project finance and make investment in a more reliable environment.

Currently, TurkDEX operates derivatives market in Turkey and with regard to energy derivatives introduced the TurkDEX-Base Load Electricity Futures Contract, which enables the participants to manage risks arising from electricity price movements. The reference price for TurkDEX-Base Load Electricity Futures Contract is the average of the day ahead hourly prices of the maturity month obtained from TEIAS. This cash-settled contract serves as an investment opportunity not only for the energy sector but also for investors in financial markets, however, transaction volume in the currently operating derivatives market is very low. Some example figures regarding the contracts in TurkDEX can be seen in the following in Figure 29 and Figure 30.

Transactions in TurkDEX can only be performed only via intermediaries and banks and transactions in the delivery time are not physically settled. There are plans to include physically settled derivatives market operating under the newly established Energy Markets Operation Corporation (EPIAS) within a couple of years; with the aim of increasing the number and variety of the contracts together with increasing market depth and providing longer term future price curves which would support the development of longer term trading (or off-taking). However by whom, whether EPIAS or Istanbul Stock Exchange, the derivative market will be operated is still under discussion.



Figure 259 - Number of Open Positions btw 12/2011-06/2012



Figure 30 26- Representing Contract Volume

5.4 OTC MARKET

Over-the-counter (OTC) markets allow market participants to physically trade electricity, resulting from bilateral discussion with the help of brokers or directly among themselves. The contracts are more flexible and have a low execution cost, but the drawback of OTC transactions is that they are vulnerable to counterparty defaults. Note that, the trading volume of electricity forwards traded in OTC markets are larger than the electricity futures.

There are major international brokerage firms that are active in Turkey, which provide an OTC trading platform for market participants that wish to trade electricity contracts. There are monthly, three months and six months contracts offered to market participants. However, stamp duty is currently one of the most important barriers for OTC trading in Turkey and draft EML indicates that OTC market operated by the Company, having a market operation license will be exempted from

stamp duty. As the energy trading progresses, it is expected that the total volume on the OTC market will grow further.

5.5 ESTABLISHMENT OF EPIAS

Considerable work is going on in setting up an independent energy exchange in Turkey, in order to establish a more transparent, effective and healthy operating spot and derivatives markets similar to other European countries. Within this scope, in draft EML, market operation activity is defined as the operation of the organised wholesale electricity markets and financial settlement of these markets. A new company, EPIAS, is pointed out as the company that will be responsible for operation of organised wholesale electricity markets (e.g. day ahead, intraday, derivatives markets) and will be issued market operation license by EMRA. The newly established energy exchange is expected to:

- be independent and transparent in its decision making process, while in harmony with the EU directives and legislations,
- have an arms length relationship with all of the market participants and treat them equally,
- make easier investment decisions since, it will not be subject to articles of Public Tender Act, which usually takes a longer process. Moreover, R&D investments will be much easier due to strong capital structure,
- be able to participate to international electricity markets as a counterpart, shareholder or be a member of international electricity market operators and it will be able to access to a global network with better liquidity, quality and transparency.

In draft EML, it is also stated that "Regulation Regarding Establishment and Governance Structure of the Company" will be published by EMRA within six months following the enactment of the Law. In the second six months the company will be established and EPIAS will be licensed and will start to operate within four months after its establishment. Despite the draft EML, shareholder structure of the energy exchange, and which of the markets will be operated under the energy exchange is still being discussed between Ministry of Economy and Ministry of Energy and Natural Resources.

6. EFFECT OF EXPECTATIONS TO EXPORT FROM GEORGIA

With the current market structure, exports and/or imports from or to the neighbouring countries can be done by the approval of the EMRA in Turkey. In case the required conditions take place in their license:

- **Wholesale** companies can perform import and/or export activities.
- Retail sales companies and distribution companies that have retail sales license can perform import activities for voltage levels 36 kV and below.
 - o Export and/or import activities of these legal entities are regulated within the scope of their wholesale or retail sales license and no additional license is required.

However, it is crucial to remember that, within the existing legislation, exporting and/or importing activities can only be performed by licensed market participants in Turkey; Georgian entities can not be directly involved in trading

activities in Turkey, unless they obtain a licence from EMRA. Therefore, Georgian entities (generators, exporters, etc.) are not directly effected by the daily market schedule displayed in the previous section. However, they should inform their TSO (in case TSO's of both countries are communicating) or the Turkish counterparty (in case TSO's are not communicating, instead both counterparties are communicating) about the hourly generation programs of the following day, every day until 10:00 hours.

How Georgian entities might be involved in daily process of Turkey

At this point, three possible scenarios for trading between Turkey and Georgia may be discussed. The capacity in the interconnection may be allocated to different exporters via explicit auctions; the capacity in the interconnection may be allocated to one exporter (aggregating wholesale trade); Georgia may be a different trade zone and implicit auctions may be held between Georgia and Turkey.

Explicit auction and capacity is allocated between different exporters in the long term: In case the capacity is allocated in the long term by Georgia to different exporters, Georgian TSO should notify the exporter and the export volume of each exporter to Turkish TSO. The exporter in Georgia has to sign a **bilateral contract** with the Turkish importer counterparty, to make cross border trade.

- Exporters in Georgia has to make nomination to the Georgian TSO regarding their daily schedules on an hourly basis. Since, all export/import nominations in the European border of Turkey are finalized by 10:00 AM every day, this nomination should be done before 10:00 AM.
- TSOs of the two countries should communicate daily. For instance, nomination between Turkish TSO and Georgian TSO should be finished before 10:00 AM (in Turkish time zone) as this is the nomination time for TCAT (Cross border trading platform for Turkey, Bulgaria and Greece) for market participants.
- Importer in Turkey can sell the energy transferred; through the day ahead market, whose operation was explained in detail in the previous sections or signing bilateral contracts with a market player within Turkey. Since the interconnection method between Georgia and Turkey is asynchronous and **in line with current import/export legislation in force**, energy imported is not recorded as bilateral contract in the system as an import, instead it is recorded as generation of the importing company. As DC Back-to-Back interconnection will be the first example for Turkey, there might be some amendments in rules and procedures on import / export through this interconnection. This situation will further be discussed in the next report.
 - If he wants to sell the energy in day ahead market, each day he should stick with the schedule shown in Figure23;
 - till 11:00 he has to fulfill his collateral obligations,
 - till 11:30 he has to submit bids/offer to the Market Operator through MMS,
 - till 12:00 bids are controlled and accepted/rejected considering the collaterals submitted by related participants,
 - till 14:00 day ahead price is calculated and final results are published to participants.

- If he wants to sell the energy through bilateral contracts, each day market participant has to notify the Market Operator about the hourly volumes of bilateral contracts and regarding the counterpart in Turkey, till 16:00.

Processes regarding settlement of imbalances of the market participant, that is calculated and invoiced in monthly basis considering actual meter data, is the same as the imbalance settlement procedure.

Explicit auction and capacity is allocated to one exporter (aggregating whole trade): The process, timeline and nominations are similar to the process stated in the previous mechanism. Exporter has to sign a **bilateral contract** with a wholesale company in Turkey (importer) who has import/export rights stated in his license. The counterparty in Turkey can sell electricity through bilateral contracts or in wholesale electricity market (day ahead, intraday, OTC etc). In addition, all of the generators providing energy to the aggregating exporter in Georgia has to make nomination to the exporter regarding their daily schedules on an hourly basis. The aggregating exporter shall nominate the daily schedules on an aggregate level to the Georgian TSO and also TSOs of the two countries should communicate daily. All of these nomination processes should be finalized before 10:00 AM (in Turkish time zone). This method would allow a huge amount of energy, and thus, it will be easier to find off-takers for larger volumes of energy. On the other hand, since the aggregator will behave as a balance responsible party in Georgia, imbalances (which renewable energy generators usually face) caused by one generator can be met by another generator and this will reduce the individual imbalance risk.

Implicit Auction and Trade Zones: After construction of back to back station and start of an operational day ahead market (not also suppliers but also consumers participating to the market) in Georgia, implicit auction can be a possible trading method between the two countries. If this is the case, it can be expected that Georgian trade region will be lower price zone, whereas Turkey will be higher price zone and direction of flow will be from Georgia to Turkey. If there is supply but no demand in Georgian region and;

- If no flow is allowed between Turkey and Georgia, price in the Georgia region becomes "0".
- If flow quantities between two regions is less than or equal to the available transmission capacity between Georgia and Turkey, market clearing price is the same in both regions.
- If flow quantities between two regions is more than the available transmission capacity reserved between Georgia and Turkey, different prices are determined for each region where price in Georgian region is lower than the price in Turkey (but higher than "0" price).

In case implicit auction methodology is applied, timeline for day ahead trading for both of the countries shall be parallel. Besides, TSO of both countries has to cooperate in order to decide and publish to market participants the available transmission capacities between these two countries in daily basis before 09:30, as shown in Figure 23. In consequence, with this trading mechanism, Georgian entities should stick with the daily schedule shown in Figure 23 and any changes in this schedule will lead a change in Georgian daily schedule.

How Georgian entities will interact with Turkish counterparts

As mentioned several times earlier, either the Georgian generation company or the aggregator (namely, the exporter) has to sign a bilateral contract with a licensed Turkish wholesaler, in order to sell electricity to Turkey. In both cases, the exporter should notify the daily generation schedule to the TSO and to the Turkish importer from day ahead till 10:00 AM, on an hourly basis. After this notification, TSO's of the both countries have to communicate regarding the daily generation schedule on an aggregate level, till 10:00 AM in the day ahead.

The Turkish importer can sell the energy transferred through bilateral contracts or through Turkish electricity market; the processes of which are explained in detail in the previous section. The relationship and information flow between Georgian and Turkish entities are displayed in the following figure.

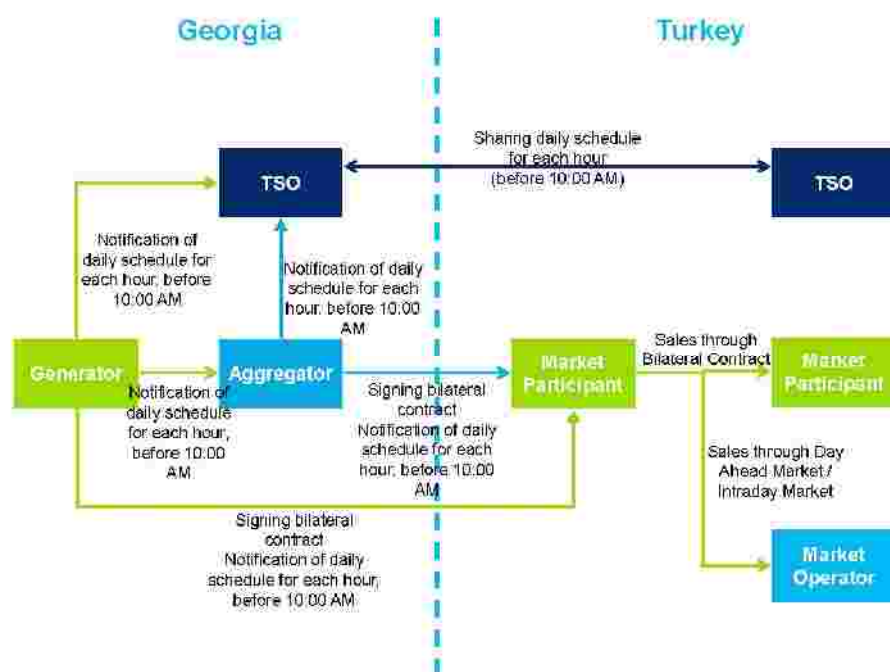


Figure 27 – Relationship between Georgian and Turkish entities

How Georgian entities will be affected from the expectations in Turkish Electricity Market and obligations of these entities while commercial trade between Turkey and Georgia

Privatizations

By the end of 2012, transition period contracts are going to be over. This is going to be another factor that brings competition for the retail sales companies and pave the way for a high volume and long term bilateral contracts in order to manage their risks. This may create more bilateral sales opportunities for Georgian generators (or exporters) however; there will be no changes in the daily schedule of the operations due to privatizations.

Transition Period Contracts

As defined earlier, following termination of transition period contracts, increase in the volume traded by EUAS freely via auctions and other possible deregulated sales channels will encourage market players and wholesale market volume is expected to escalate. Increased wholesale volume would foster cross border trade opportunities. Besides, termination of these contracts between retail sales companies and EUAS will also create new opportunities for trade between Georgian generation companies and those retail sales companies, which has no longer energy purchase contracts with EUAS.

Intraday Market

As mentioned in the previous sections, a continuous trade intraday market is coming online, which will create a new trading opportunity especially useful for renewable generators. Such a market design will enhance importing hydro stemmed energy from Georgia, by eliminating the possibility of imbalances that market participant face resulting from wrong forecasts in Turkey. This will create new opportunities for Georgian hydro power potential.

After intraday market becomes operational, Turkish market participants will be able to sell/buy energy from intraday market from two hours before delivery time. Participants may have a thought that renewable energy imported may cause imbalances, however together with the intraday market, since the trade can be performed close to real time, forecasts are expected to be performed better and this will remove the concerns regarding renewables.

Establishment of Intraday Market will not directly affect the daily procedure of a Georgian generator or exporter, unless the entity is directly involved in Turkish market. However, the counterparty in Turkey may prefer to act in Intraday Market, in such a case, the Georgian importer and the Turkish counterparty may communicate effectively until two hours to delivery. On the other hand, according to the design of the trading mechanism between Turkey and Georgia, the Georgian exporter should inform the Georgian TSO regarding the hourly generation program regularly, instead of notifying the program only once in a day, until 10:00 AM. After nominations from the exporter are finalized, hourly flow programs should be updated by the TSO's and TSO's of the two countries should communicate hourly, instead of daily. For such a case, market rules and the trading mechanism should be designed in a way that allows trading in intraday market.

Derivatives and OTC Markets

All the developments mentioned in the previous section show the dynamism, potential and the fast evolution of Turkish electricity market. Moreover; derivatives and OTC markets will not only ensure a healthier market structure by increasing the market volume but also create new trade opportunities with Georgia in the long term. OTC trading of not-used capacity might be possible when there is liquid OTC market in Turkey and that would increase trade opportunities with Georgia; however, system operators and the aggregating exporter should be aware of near-real-time changes in their supply portfolio.

Together with development of these markets, trading opportunities and competitiveness in Turkish electricity market will increase, which may lead in increase in cross-border trading volume, especially when the costs of hydro resources in Georgia are considered. Positive impact of derivatives market to the overall trade environment is also expected to encourage investors in long term bilateral contracts. However, since design and timeline of the markets are not determined yet, they can be considered as not affecting the daily schedule of market operations.

Establishment of EPIAS

EPIAS, whose main target is to make Turkish electricity market a regional leader and strengthen the international integration, will be established. With its independent structure and ability to act and implement fast, EPIAS will supervise and operate the electricity market efficiently. However, it is being thought that establishment of EPIAS will not directly effect cross-border trade between Georgia and Turkey. On the other hand, since EPIAS is expected to be more autonomous and independent in its decisions, communication between Market Operators of these two countries may be stronger.

7. CONCLUSION

As mentioned throughout the report, Turkish electricity market has been undergoing a significant transformation and development since 2001. The main purpose of change which is marked by liberalization is to establish a sound, competitive and attractive investment environment that helps to secure electricity supply and provide the end users with affordable and non-intermittent electricity. Together with the established market mechanism and expected developments within the electricity market, Turkey might in the future become a role model for the other countries in liberalization process. On the other hand, with its regularly increasing energy demand, Turkey is a potential country for new energy investments and import activities.

Turkey is synchronously parallel connected to ENTSO-E and monthly auctions are held in allocation of the capacity in the interconnection line. Other than synchronous parallel connection, Turkey has small amounts of trade between other neighbouring countries. From the neighbouring trading partners, Georgia is a substantial candidate with its rich hydro resources. Within the scope of this report, expected developments in Turkish electricity market and three alternative trading mechanisms are discussed considering the current market rules and scheduling. These three alternatives cover: allocation of interconnection capacity to different exporters via explicit auctions; allocation of interconnection capacity to one exporter (aggregating wholesale trade); or describing Georgia as a different trade zone and allocation of capacity via implicit auctions. Timeline of each of the alternatives are evaluated with regard to the Turkish electricity market daily process, and the changes that the expectations might

cause in the process is described within the scope of cross-border trading between Turkey and Georgia. Within the context of current market structure and rules in Turkey, it is known that Georgian generating company or an importer can only sell energy if it has a counterparty in Turkey that has bilateral contract signed with him and the counterparty in Turkey has to obey the balancing and settlement rules and schedules applied in Turkey. On the other hand, TSOs and the generation companies has to be in coordination about the daily generation schedules considering also the cross-border trade opportunities between Turkey and its other neighboring countries.

As a next step and for the future design, existing import and export rules will be evaluated in detail as well as licensing regulation. Additionally, draft energy trading mechanism designed for Georgian electricity market will be evaluated, some recommendations will be given regarding the mechanism, within the scope of the effects and recommendations discussed in this report and further trading opportunities between Turkey and Georgia will be evaluated.

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Deloitte Consulting Overseas Projects - HIPP

11 Apakidze Street, Tiflis Business Center

Tbilisi, 0171, Georgia